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# USSR Report

HUMAN RESOURCES

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LABOR

WAGE SCALE GROWTH PATTERNS IN VARIOUS BRANCHES OF INDUSTRY

Moscow VESTNIK STATISTIKI in Russian No 10, Oct 85 pp 73-75

[Article entitled: "II. Wages of Workers and Employees in the National Economy of the USSR"]

[Text] Table 1. Average Monthly Wages of Workers and Employees in the National Economy (Rubles)

(1) Годы	(2) Среднемесячная денежная зарплата	(3) Среднемесячная заработная плата с добавлением выплат и льгот из общественных фондов потребления
1975	145,8	198,9
1980	168,9	232,7
1981	172,5	238,8
1982	177,3	246,8
1983	180,5	254
1984	184,8	260

Key:

1. Years
2. Average Monthly Monetary Wage
3. Average Monthly Monetary Wage With the Addition of Payments and Benefits From Public Consumption Funds

In the 11th Five-Year Plan, new measures to increase the wages of workers and employees in the national economy are being implemented.

An increase in the wage rates and salaries of workers and employees in the coal (shale) industry and mine construction has been put into effect.

In all regions of the country, the salaries for leading workers, specialists and employees of state farms and other state agricultural enterprises have been increased, as well as for leading workers and specialists of the ministries of agriculture of the autonomous republics, kray, oblast and rayon administrations of agriculture, which are executing the functions of the working apparatus of the soviets of the agro-industrial associations.

Table 2. Average Monetary Wages of Workers and Employees by Sectors of the National Economy (Rubles)

	1975	1980	1981	1982	1983	1984
(1) Все народное хозяйство . . . . .	145,8	168,9	172,5	177,3	180,5	184,8
(2) Промышленность (промышленно- производственный персонал)	162,2	185,4	189,6	196,1	199,4	204,6
(3) Сельское хозяйство	126,8	149,2	153,1	158,7	168,5	176,4
(4) из него совхозы, межхозяйст- венные и другие производ- ственные сельскохозяйственные предприятия . . . . .	126,7	149,2	152,9	158,8	168,9	177,4
(5) Транспорт . . . . .	173,5	199,9	204,3	210,1	212,7	215,3
(6) железнодорожный . . . . .	158,1	187,4	191,0	198,0	201,9	206,0
(7) водный . . . . .	212,8	232,0	241,7	248,9	252,8	258,4
(8) автомобильный, городской элек- трический и прочий транс- порт; погрузочно-разгрузоч- ные организации . . . . .	177,1	202,5	206,8	212,2	214,1	215,9
(9) Связь . . . . .	123,6	145,8	148,1	150,5	152,5	155,8
(10) Строительство . . . . .	176,8	202,3	209,4	217,2	222,4	229,2
(11) из него строительно-монтажные работы . . . . .	181,1	204,5	211,4	218,9	224,8	231,8
(12) Торговля и общественное питание; материально-техническое снаб- жение и сбыт; заготовки . . .	108,7	138,2	140,7	142,2	142,8	145,9
(13) Жилищно-коммунальное хозяйст- во; непроизводственные виды бытового обслуживания насе- ления . . . . .	109,0	133,2	135,8	139,0	141,0	143,4
(14) Здравоохранение, физкультура и социальное обеспечение . . .	102,3	126,8	128,5	129,8	130,5	131,4
(15) Народное образование . . . . .	126,6	135,9	136,7	137,5	138,2	142,0
(16) Культура . . . . .	92,2	111,3	112,8	114,1	114,7	115,6
(17) Искусство . . . . .	103,1	134,8	136,5	137,4	136,8	137,7
(18) Наука и научное обслуживание	157,5	179,5	183,2	190,9	194,1	198,3
(19) Кредитование и государственное страхование . . . . .	133,8	162,2	166,8	168,9	172,4	175,8
(20) Аппарат органов государственного и хозяйственного управления, органов управления кооператив- ных и общественных организа- ций . . . . .	131,8	156,4	158,1	159,6	159,5	161,5

Key:

- |  |  |
|--|--|
| 1. Entire national economy   | 11. Of it, construction-installation work  |
| 2. Industry (industrial personnel engaged directly in production)                                  | 12. Trade and public catering; material-technical supply and marketing; procurements                                       |
| 3. Agriculture   | 13. Housing and municipal services; nonproductive types of consumer services   |
| 4. Of it, sovkhoz's, inter-farm and other agricultural production enterprises                      | 14. Public health, physical culture and social security  |
| 5. Transportation  | 15. Public education   |
| 6. Railway   | 16. Culture  |
| 7. Water   | 17. Art  |
| 8. Motor vehicle, electric and other transportation in cities; loading and unloading organizations | 18. Science and scientific services  |
| 9. Communication   | 19. Crediting and state insurance  |
| 10. Construction   | 20. Apparatus of organs of state and economic management, organs of the management of cooperative and public organizations |

The salaries for some categories of engineering-technical personnel of the textile and some other sectors of light industry have been increased.

In accordance with the Basic Directions of the Reform of the General Education and Vocational School of 1 September 1984, the wages for teachers of the beginning classes of general education schools of all types, teachers, leading and other pedagogical workers of boarding schools, children's homes, houses of the child, foremen of production training and leading workers of institutions of vocational-technical education preparing skilled workers for agriculture and the coal industry, have been increased. The pay of a number of other categories of workers in public education has also been increased.

As of 1 September 1985, there has been an increase in the wage rates and salaries for teachers of the middle and upper classes, teachers, foremen of production training, and leading and other pedagogical workers of general education schools, institutions of secondary specialized and vocational-technical education, and inter-school educational-production combines for labor training and vocational orientation of students located in the regions of the Far North, in the European North, in regions of Siberia and the Far East, the Urals economic region, as well as in the Mari ASSR, the Chuvash ASSR, Vologda, Kirov, Novgorod and Pskov oblasts. As of 1 September 1985, there has also been an increase in the salaries of medical, administrative-economic and service personnel of children's homes, boarding schools and houses of the child.

Measures have been put into effect in regard to the regional regulation of wages. Regional coefficients have been introduced for the wages of the workers of sovkhoz's and other state agricultural enterprises (for which they had not been established) in the oblasts of the Urals and in the majority of the oblasts of Kazakhstan, as well as of the enterprises of the USSR Ministry of Light Industry located in the northern and eastern regions of Kazakhstan.

Table 3. Average Monthly Wages of Industrial Personnel Engaged Directly in Production by Sectors of Industry (Rubles)

	1975	1980	1981	1982	1983	1984
(1) Вся промышленность . . . . .	162,2	185,4	189,6	196,1	199,4	204,6
(2) Электроэнергетика . . . . .	167,3	190,2	194,3	199,5	200,6	204,2
(3) Топливная промышленность . . . . .	245,0	271,7	277,5	299,1	298,9	301,2
(4) Черная металлургия . . . . .	188,0	214,1	218,0	221,9	226,4	231,6
(5) Химическая и нефтехимическая промышленность . . . . .	165,2	183,2	187,0	191,0	193,6	199,4
(6) Машиностроение и металлообработка . . . . .	164,1	187,5	191,7	198,4	201,7	207,7
(7) Лесная, деревообрабатывающая и целлюлозно-бумажная промышленность . . . . .	169,3	191,6	196,9	202,2	206,3	212,1
(8) Промышленность строительных материалов . . . . .	165,3	180,2	184,7	189,8	195,1	199,5
(9) Стекольная и фарфоро-фаянсовая промышленность . . . . .	151,0	168,5	172,1	176,0	180,0	183,4
(10) Легкая промышленность . . . . .	124,6	149,9	152,8	156,7	158,8	162,5
(11) Пищевая промышленность . . . . .	146,5	167,2	170,3	175,9	180,0	184,0



Key:

- |  |  |
|--|--|
| 1. All of industry                     | 7. Timber, wood-processing and pulp and paper industry |
| 2. Power industry                      | 8. Construction materials industry                     |
| 3. Fuel industry                       | 9. Glass and china-faience industry                    |
| 4. Ferrous metallurgy                  | 10. Light industry                                     |
| 5. Chemical and petrochemical industry | 11. Food industry                                      |
| 6. Machine building and metal-working  |  |

In some sectors the increase of the dimensions of additional wage payments for work during nighttime has been continued. In addition, the introduction of long-service bonus payments for workers of a number of sectors of industry and other sectors of the national economy, which was carried out by regions of the country, has been completed. The payment of these bonuses has been introduced for workers [engaged in] the basic activity of railway transportation, workers [engaged in] the basic activity of contracting construction organizations and river transportation for general use, workers of the sea ports of the Ministry of the Maritime Fleet directly connected with the loading and unloading of cargo, and workers of the bread-baking industry of the USSR Ministry of the Food Industry, the flour milling and grain industry of the USSR Ministry of Procurement, and some other sectors of industry.

For all permanent workers of sovkhoz's and other state agricultural enterprises of the Non-chernozem Zone of the RSFSR, wage increments have been introduced for uninterrupted length of service in a given farm (with the exception of tractor operators, for whom these increments were established previously). Analogous increments have been introduced for workers employed in animal husbandry, in all regions of the country.

Monthly wage increments have been introduced for physicians of district [uchastkovykh] hospitals and dispensaries located in rural areas, district therapists and pediatrists of urban polyclinics and some categories of physicians of a number of other public health institutions, for uninterrupted work of more than 3 years in the indicated institutions and in the territorial sectors.

Some other measures to increase wages have been put into effect.

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LABOR

BETTER WAGES WILL RAISE PRODUCTIVITY AMONG DESIGNERS, ENGINEERS

Moscow VOPROSY EKONOMIKI in Russian No 10, Oct 85 pp 42-50

[Article by N. Amonskiy: "Improving the Wages of Designers and Process Engineers"]

[Text] Advancing to the foreground of our economy's development today are the problems of intensifying the universal raising of labor productivity, based on the most rapid possible introduction into the national economy of the achievements of scientific and technical progress. Scientific and technical progress depends, to a large extent, on the level of the work done by scientific research, planning and designing, and technological organizations and sub-divisions. How can we motivate their workers to achieve high end results with the least possible material, labor, and financial expenditures?

The level of wages which has taken shape in the design and process engineering organizations and sub-divisions, along with the lack of a substantial differentiation in wages, do not provide incentives for the workers' creative activity. The average wage of most designers and process engineers at the present time is, in many cases, lower than the average wage of workers in most occupations. All this affects the labor output of designers and process engineers, lowers the prestige of their labor, and reduces the influx of creative young persons into science.

It is high time that we solve the problem of raising the wage level of those engineering and technical personnel who work with initiative and, in the first place, designers and process engineers. Raising the wage level of labor group groups must be conditioned by the active utilization of the reserves for labor productivity growth which exist in associations, at enterprises, and in organizations, increasing production efficiency on the basis of applying new technical solutions, simplifying and cutting back on administrative machinery, combining occupations, using the brigade forms of labor organization, eliminating losses in worker time, strengthening discipline and order, as well as developing creative activity. Centralized resources, whose amount should not be predominant, must be directed merely at raising the guaranteed minimum wage and at improving its correlations.

Great possibilities for the growth of wages of actively working designers and process engineers by means of internal reserves are contained in the experiment which has been conducted in Leningrad since 1983 with regard to improving the wages of employees of design and technical organizations and sub-divisions.



The experience accumulated during the course of this experiment has demonstrated the feasibility of widely disseminating a number of its propositions. This was reflected in the decree of the CPSU Central Committee, the USSR Council of Ministers, and the AUCCTU, entitled "On Improving the Wages of Scientific Workers, Designers, and Industrial Process Engineers."

The goal of the Leningrad economic experiment is to upgrade the quality and technical level of new developments and to ensure the very rapid assimilation and putting into production by means of strengthening the responsibility and material motivation of designers and process engineers. An outside limit on the number and the constant wage fund was established for the organizations and sub-divisions. By means of economizing on the wage fund it is permitted to raise the wage level for employees who work well. Changes have been provided in the principles of approach to the awarding of bonuses in accordance with the results of the economic activity of enterprises, which allows us to differentiate significantly in the wages of designers and process engineers.

Reducing the number of employees constitutes the principal source of economizing on the wage fund. By the time the experiment began to be conducted economies had been created on a scale sufficient for raising the wage level of those workers making a decisive contribution to developing highly efficient equipment and engineering processes. Initially, during the preparatory period, the managers of associations regarded the question of reducing the number of designers and process engineers with great caution, and they had grounds for this. At a certain time many Leningrad enterprises were enthusiastic advocates for a broad-based introduction of the Shchekino method. As is known, this method is based on the following three principles: a stable production plan for a number of years, a constant wage fund for this same period, and a special right to dispose of its saved portion for the purpose of encouraging employees to intensify their work. However, when it was introduced, the enterprises encountered substantial difficulties: with the non-observance by the higher-ranking organizations of the guarantees with regard to a stable production plan for a number of years, the wage fund, and the limit on numbers. Nor was there a reinforcement of the enterprises' rights to dispose of the saved portion of the wage fund for the purpose of encouraging work intensification. The groups at enterprises which were working in accordance with the Shchekino method and achieving better production indicators turned out to be in a more difficult financial position. The savings achieved by the end of the year with regard to the number of employees and the wage fund reduced the "base" for the new plan; the planned numbers and wage funds for each ensuing year turned out to be decreased.

In connection with the given negative phenomena in introducing the Shchekino method, it was particularly important to achieve a situation whereby the managers of enterprises taking part in the experiment regarding the improvement of wages in designing and process engineering organizations and sub-divisions would accept its conduct not as something imposed from above but rather as their own, vital, personal business, in which they themselves would be motivated above all. It was no less important to achieve a recognition by the managers that the guarantees provided by the statute on the experiment would be carried out unwaveringly.

During the course of the experiment many questions arose in connection with the laying off and subsequent job placement of workers. First of all, during the preparatory period the goals and tasks of the experiment were precisely and convincingly explained to the participants in the experiment, and this helped each worker to evaluate his own possibilities and to make the decision himself as to whether or not he would be able to work in the new manner. A great deal of attention was paid to creating the conditions which would stimulate the transfer of workers, on their own initiative, to those production sections where they are more necessary. Furthermore, during the preparatory period, which lasted for five months, new persons were not accepted for the staff positions of workers who had been laid off at their own wishes. This allowed us to have a considerable number of staff vacancies by the beginning of the experiment. Reducing the number of employees was likewise facilitated by the large and important work accomplished by the associations regarding improvement in the structure of administering the design and process engineering sub-divisions. The structural changes were directed at eliminating parallelism and duplication in the work of the sub-divisions, at seeing to it that the staffs of the research, design, and process engineering sub-divisions correspond as completely as possible to their topical plans and tasks.

Particular influence on the yield factor of the experiment has been rendered by mechanizing and automating the work of the designers and process engineers. While reducing the number of the workers and upgrading their skills, it is necessary to free them from routine work. That portion of the operations for which there are analogies and solutions have been worked out should be transferred to the automated systems, while, at the same time, simplifying the procedure for preparing and curtailing the number of necessary documents. The associations meticulously worked out plans for measures to automate and mechanize the design and process engineering operations, and they sent applications for technical means to the ministries. In accordance with the requisition applications for 1984-1985, the associations have been allocated computer equipment and means of mechanization for conducting operations with regard to automating and mechanizing engineering work.

Agreements have been concluded between the associations and the participants in the experiment regarding creative cooperation in supplying the automated work places with process engineers and training them to work there. The Izhorskiy zavod, Leningradskiy metallicheskiy zavod, and Nevskiy zavod have jointly been carrying out work on topical programming, accumulating data banks, and introducing automated solutions of engineering processes. Particular note should be taken of the active work with regard to introducing automated systems and means of mechanizing the work of the engineering and technical personnel at the Leningradskiy metallicheskiy zavod PO [Production Association].

During the preparatory period and the first six months of operating under the conditions of the experiment the associations vacated 632 staff units, which amounts to 7.1 percent of the total staff number of those participating in the experiment, including the actual laying off of 382 persons, or 4.3 percent. The most vacating of staff units was achieved in the following associations: Leningradskiy metallicheskiy zavod--8.1 percent, Izhorskiy zavod--8.4 percent, and Elektrosila--7.0 percent.

During the first six months of operating under the conditions of the experiment by means of freeing up a number of vacancies in five associations savings were formed with respect to the wage fund amounting to a total of 892,500 rubles, i.e., 11.1 percent of the wage funds for the corresponding period, including the following breakdown: at the Izhorskiy zavod PO--352,000 rubles (15.3 percent), at the Leningradskiy metallicheskiy zavod PO--154,600 rubles (9.4 percent), at the Nevskiy zavod PO--71,700 rubles (9.3 percent), at the Elektrosila PO--246,000 rubles (11.1 percent), and at the Leningradskiy elektromekhanicheskiy zavod PO--68,000 rubles (10.2 percent).

In accordance with the conditions of the experiment, maximum staff numbers are established for the sub-divisions, within the limits of which they can lay off or, in case of necessity, accept staff workers to fill vacancies. Moreover, the sub-divisions have been granted the right to organize temporary groups in order to carry out occasional projects or those which are not appropriate to the given structural sub-division. These rights are widely used by the associations. Therefore, the laying off of a number of staff workers and, consequently, the savings on the wage funds in various intervals of time can be larger or smaller.

Two groups of factors affect the level of material rewards for the labor of each worker. Included among the first group are the parameters of labor activity in combination with the conditions of labor and the sphere of its application, more precisely, the following: the level of the work's complexity, difficulty, attractiveness, harmfulness, etc. These evaluations are reflected in the centrally established amounts of the wage rates, the schedules of position wage rates, and supplements for working conditions. Wage differentiation with regard to the second group of factors, i.e., depending on the individual results of a worker's labor (his work efforts, the level of his personal capacities, and the degree of preparedness for the given type of activity) is carried out at enterprises and in organizations. For engineering and technical personnel the possibility of such differentiation is ensured by the presence of "brackets" between the minimal and maximal position wage rates in various systems of awarding bonuses.

In reality, the scheme described here is not so perfected. At the present time the gap between the minimal and the maximal wage rates for engineering and technical personnel is not large, and this permits us to single out merely in an insignificant way the wages of a specialist who manifests a creative approach to the task at hand and who is systematically upgrading his own skills. It is also important to note the circumstance that a position wage rate is designated for a lengthy period of time. This characteristic of the wage rate contradicts the nature of design and process-engineering activity, the variable nature of the load and labor output of the workers. To link the wages being received with the work results is a difficult task, and far from all the proposals regarding this matter are acceptable. In particular, the proposals regarding the so-called "floating wages" merit critical evaluation.

In this case, we must recall the Lvov Pulsar system, the essence of which consisted in the fact that, in accordance with the results of certification, conducted twice a year (during the first half-year--an intermediate one and at the end of the year--a sum-total one), a shift occurred of as much as 10



percent of these workers upward and as much as 10 percent downward on the service ladder, or their wage rates were changed either upward or downward within the limits of the "brackets" without changing their positions. Among the principal shortcomings of this system we should cite the following: the nature of reviewing the wage rates (once or twice a year), the lack of a direct connection between wages and the results of everyday work, and, finally, the well-known voluntarism in deciding the question of lowering and raising wage rates.

But just how should we establish a direct, organic link between the wages of engineering and technical personnel and its results? As it seems to us, there are no obstacles here which cannot be overcome. The flexibility of providing material incentives for the work of engineering and technical personnel is achieved by added wages, supplementary payments, and bonuses. Additional wages can be used in the case of holding down two jobs, expanding the service zones, or increasing the amounts of work being performed, and they are allowed in cases where the worker during the course of a workday with an established length provides a high-quality and on-time performance of his duties with regard to his primary and secondary jobs or an increased volume of work. Additional wages amounting to as much as 30 percent of the wage rate for work performed by a lesser number of workers for the basic position are established by the enterprise managers upon agreement with the trade-union committees on condition that there is an actual layoff of a number of workers, as compared with the inter-sectorial and sectorial norms of the numbers and with the standard staffs. At the same time, if at the enterprise as a result of organizational-technical and economic measures, as well as the use of advanced labor methods, there is the possibility of working out more progressive labor norms than the inter-sectorial and sectorial ones, the managers of the enterprises and organizations, in conjunction with the trade-union committees, are obliged to replace the outmoded norms with new and progressive ones. In such cases retaining the previous norms and determining the staff schedules based on them would be incorrect, since it would lead to "laying off" deliberately excess workers and a mechanical increase by means of providing additional wages to certain workers. This circumstance explains, to a certain degree, the fact that additional wages have not found widespread use in practice.

In order to differentiate among the wages for the same positions held by engineering and technical personnel, widespread use is made of supplementary payments. In accordance with the Leningrad experiment on improving the wages of designers and process engineers by means of economizing on the wage fund, supplementary payments not bound by the extreme limits can be established for such workers. During the first few months of work by the associations under the conditions of the experiment the question arose as to what kinds of supplementary payments should be made in the course of the experiment. The question of classifying the kinds of supplementary payments is quite complex, and at the present time we cannot provide a final answer to it. With regard to the classification criteria, the supplementary payments in associations are distributed unevenly, a fact which is primarily connected with the specifics of their work. During 1984 at the associations the supplementary payments in accordance with the classification criteria were distributed in the following manner:

	Leningrad- skiy metal- licheskiy zavod	Leningrad- skiy elek- tro-mekha- nicheskiy zavod	Izhorskiy zavod	Elektro- sila	Nevskiy zavod
Highly skilled .....	26	10	5.3	34	6.1
Shortening the deadlines for completing work on the most important topics	29	26	25.1	18	62.7
Completing work in excess of the assigned task ..	45	44	12.8	15	25.2
Completing tasks with re- gard to eliminating "bottlenecks" .....	--	20	--	14	2.3
Performing the duties of temporarily absent workers .....	--	--	56.8	--	2.0
Reducing labor-intensive- ness and material- intensiveness .....	--	--	--	8	--
Surpassing the assigned technical parameters ...	--	--	--	11	1.7

As may be seen from the data in the table shown above, supplementary payments are basically established for performing the most responsible tasks, completing projects before the deadline, high skills, and performing the duties of absent workers. However, supplementary payments have also been established for "solving bottlenecks," and this does not fully correspond to the goals of the experiment. The question of determining the sizes of various kinds of supplementary payments has not yet been fully decided. Proceeding from the operational experience of the associations under the conditions of the experiment, it has been recommended that the size of the supplementary payment for highly skilled workers be established without applying the formalized evaluations, but rather utilizing the existing savings made in the sub-division with regard to the wage fund and merely limiting for the sub-divisions the maximum number of persons who can receive such supplementary payments. The sizes of the supplementary payments for shortening the deadlines for completing work, for completing a larger amount, for achieving parameters higher than those assigned were proposed to be determined in accordance with a method which takes into account the minimal number of quite simply calculated indicators characterizing the quantity and quality of work with regard to a specific project.

Analysis of the normative base of design and process-engineering developments in associations bears witness to the fact that without improving this base it would be impossible to achieve the goals and tasks envisioned by the experiment. It cannot be said that prior to the experiment being conducted there

was a complete lack of a normative base for design and process-engineering developments. There did exist a number of sectorial and inter-sectorial recommendations, on the basis of which norms of labor intensiveness were computed for many kinds of projects. They have not, however, been substantially used. Under the conditions of the experiment, when we were faced with the task of bringing the wages of designers and process engineers more closely in line with their labor contribution, a serious question likewise arose concerning the quality of the norms. In order to render practical assistance to the enterprises, the "Methodological Principles of Calculating the Norms of the Labor Intensiveness of Design, Process-Engineering, and Research Work" have been developed; they have provided the methods for calculating labor intensiveness in a topical cross section and for individual planning. By the present time the consolidated and differentiated norms encompass about 80 percent of the total amount of projects engaged in by the participants in the experiment.

At the Leningradskiy metallicheskiy zavod association, in order to develop norms in the sub-divisions, working groups were created, headed up by the leading specialists of the groups. They included the most experienced designers and process engineers. The working groups have conducted an analysis of the existing norms with respect to the kinds of projects and have selected the best of them. A number of norms were developed anew. The development and redevelopment of the norms has been carried out, taking into account the rise in the level of intensiveness of the norms by means of fully utilizing working time, improving labor organization, and other factors. Thus, for example, in the chief process engineer's division the time norms for work on the engineering preparations for producing steam turbines were increased by 23 percent on an average. At the present time the association has developed norms providing for the distribution of normative assignments for more than 85 percent of the workers.

The development and introduction of norms with regard to all types of basic projects to be carried out by designers and process engineers have allowed us to increase the justification for establishing the plan assignments for the sub-divisions and to distribute the individual tasks among the staff members. Supplementary payments are established prior to beginning the projects as well as after their completion. In the first case the size of the supplementary payment is adjusted according to the actual results achieved. As a rule, supplementary payments are short-term in their nature, i.e., they are established within a range of from one to three months--more rarely for a lengthier interval of time, and only supplementary payments for high skills are established for a year. In the opinion of most sub-division managers, the short-term nature of establishing supplementary payments provides an incentive for persons to work constantly with a high degree of efficiency. By statute supplementary payments are not limited in size, but in fact their largest amounts range from 60 to 80 rubles a month, and only in certain cases can they extend up to the limits of the wage rate for the position concerned.

Under the conditions of the experiment extremely great importance is accorded to improvement in the awarding of bonuses. It should be noted that in organizing the awarding of bonuses to engineering and technical personnel a well-known conservatism is to be observed, which is particularly intolerable when we must sharply increase production efficiency and work quality. It is



important to achieve a situation whereby a bonus is paid out for the specific results of each performer. That which is now being paid out under the guise of bonuses for the basic results of economic activity does not, for all practical purposes, have much to do with paying a specific worker a bonus for his labor, and if it does, it is only partially so. For example, the bonuses for engineering and technical personnel are computed for the fulfillment of the plan indicators and the obligatory conditions of awarding bonuses for the enterprise as a whole. Furthermore, at most enterprises additional conditions for awarding bonuses have been provided for the structural sub-divisions, already characterizing directly the work of these sub-divisions. Non-fulfillment of the additional conditions entails a reduction in the size of the bonuses by as much as 50 percent. But even in the case of unsatisfactory work by the sub-division its group has been guaranteed payment of 50 percent of the bonus for fulfilling the indicators for awarding bonuses obly for the enterprise. Sometimes it happens the other way around. The structural sub-division copes excellently with its own work, completely fulfills the conditions for being awarded bonuses provided for it, but the indicators are not fulfilled for the enterprise as a whole. In that case, all the sub-divisions are deprived of bonuses regardless of the operational results achieved by individual groups.

In order to materially motivate each worker with regard to the results of his own work as well as the work of the entire group, the bonus, in the opinion of many economists and practical workers, should be divided into component parts. One part of the bonus would be paid out for fulfilling the plan indicators for the enterprise as a whole, the second part--for fulfilling those conditions for the awarding of bonuses which have been approved for the given structural sub-division. In case a certain indicator or condition is not fulfilled, the bonus is not awarded. Herein the non-fulfillment of bonus-award indicators with regard to an enterprise ought to entail a reduction in the size of the bonus due rather than a complete deprivation of the sub-division's groups of the incentive for their individual or group work results. Naturally, within each specific period the size of the bonus must be determined within the limits of the material-incentives funds, as allocated for the current awarding of bonuses.

Meriting the most diligent attention is the proposal that, in order to strengthen the influence of the distributive relations on production, we must place first ensuring a close connection between bonuses and the specific results of personal labor. This pertains to all categories of engineering and technical personnel, for which at the present time, as a rule, there is an equal distribution of bonuses for executing the current results of economic activity, although the existing statutes on awarding bonuses provide for the possibility of depriving certain workers of bonuses for omissions in production. Deprivation of a bonus in the given cases must be formulated by an order with the indicated reason. Such a procedure is connected with many difficulties for a manager. Preparing and coordinating an order takes a great deal of time, something which a manager, as a rule, does not have much of at his disposal. Issuing a considerable number of orders regarding the deprivation and reduction of bonuses, in the opinion of many workers, bears witness to officiously bureaucratic methods of management. And, perhaps, the main thing is that issuing an order concerning the deprivation of a bonus or reducing its size creates a conflict situation between the managers and the workers, inasmuch as it

is not simple to demonstrate a person's blame for this or that omission.

Practically speaking, a bonus according to work results for fulfilling the principal technical-economic indicators is paid out to all engineering and technical personnel and in all cases, except when the plan is not fulfilled. This means that its influence on work results is extremely insignificant, all the more so in that at the enterprises for most of the engineering and technical personnel the supplementary indicators, which should characterize their work, are insufficiently specific.

Experience has shown that the most effective are the dynamic, flexible systems of awarding bonuses which provide for incentives not in accordance with indicators adopted at one time for all cases but rather for the completion of a specific assignment by a performer in each individual case. Such systems do not require the subsequent issuing of orders and dispositions concerning the deprivation of a bonus or a reduction of its size. Bonuses are not established for persons who have not participated directly in performing a task, and they have no grounds for putting in a claim for them, as is the case at the present time. In order to ensure the correctness of payments, as well as to enhance the role and the authority of the structural sub-division manager, it is proposed that bonuses be established in accordance with the following scheme. A higher-ranking manager personally approves the size of bonuses only for that circle of lower-ranking managers (performers) with whom he works directly and whose contribution to the achievement of over-all results he can evaluate, since he knows each of them by their daily work. The total amount of the bonus must be approved for awarding groups headed up by lower-ranking managers. This will make it possible for the manager, in turn, to establish a specific size of the bonus for those workers with whom he is directly connected, as well as to allot the total amount for awarding bonuses to the workers of bureaus and groups headed up by them. At present, when the bonuses for all engineers and technical workers are signed for by an enterprise's manager, the fact of awarding bonuses is formal in its nature. The person approving the bonus, in fact, does not know and cannot know the actual contribution made by each individual worker to the achievement of the over-all results.

The ideas noted above were taken into consideration in conducting the experiment concerning the improvement of the wages of workers in design and process-engineering organizations and sub-divisions at Leningrad enterprises.

Upon the fulfillment of the indicators and the conditions of awarding bonuses by an association, the size of the incentive fund for awarding bonuses in accordance with the results of economic activity is apportioned by proceeding from the plan-approved wage fund and the percentage of the bonus, as established for the given structural sub-division. The actual size of the above-indicated fund can be increased or decreased during the accounting period, depending upon the fulfillment of the fund-forming indicators by the association. In case the association does not fulfill the indicators and conditions for being awarded a bonus but the sub-division does fulfill the cost-accounting indicators approved for it, the size of the bonus due is reduced by 50 percent. In case the sub-division does not fulfill the cost-accounting indicators established for it, the bonus for the results of economic work is not awarded.

The experiment required the application of specific adjustments to the cost-accounting methods of planning and evaluating the contributions made by the sub-divisions and staff workers to the development of new equipment and technology. The long-range tasks for the planning indicators (not only with regard to the volume and products list of the work but also as to the expenditures, effectiveness, and quality of the developments) are reported to the sub-division. There has been an expansion of the rights of sub-divisions and their labor groups to utilize material and labor resources, to carry out developments on their own initiative, to distribute group wages and incentive funds. Also ensured has been the material motivation and precise responsibility for increasing the effectiveness of developments, raising the technical level of production and output, shortening the deadlines for developing and introducing new equipment, and increasing the labor productivity of engineering and technical personnel. Material responsibility has been established for the quality and deadlines for implementing developments, for carrying out the functions entrusted to the sub-division.

The internal-economic job-authorization order constitutes the basic planning document for the cost-accounting design and process-engineering sub-divisions. Composite planning of the sub-divisions' activities is carried out with respect to the volumes and products list of the work, the funds being allotted, and the indicators of the activity's effectiveness. An over-all evaluation of the sub-divisions' cost-accounting activity is made on the basis of monthly reports concerning fulfillment of the operational plan and in accordance with the association's existing statute with regard to the quality of the subdivisions' work.

The experiment is receiving increasingly wider recognition, and this is having an effect on improving the activities of associations. Testimony on this is furnished by the following data on the growth of the principal technical-economic indicators in 1984, as compared with 1983 (in percentages):

	Leningrad- skiy metal- licheskiy zavod	Nevskiy zavod	Izhorskiy zavod	Elektro- sila	Leningrad- skiy elek- tro-mekha- nicheskiy zavod
Volume of output					
normative-net .....	117	105.1	107.7	105.5	104.3
commercial .....	110.6	108.8	106.6	104.0	111.8
Volume of output in the highest quality category.	128.3	126.1	117.3	104.3	--
Production output per indus- trial production worker .	118.9	104.7	107.0	106.1	104.3

All the associations fulfilled the plan for scientific-research, design, and process-engineering work; moreover, the best indicators were achieved in those structural sub-divisions operating under the conditions of the experiment. Thus, for example, at the Nevskiy zavod 90 the volume of work being performed

by their own efforts was over-fulfilled by 116 percent, while the structural sub-divisions taking part in the experiment attained 121.6 percent. All the sub-divisions participating in the experiment over-fulfilled the plan assignments with regard to reducing the labor-intensiveness and material-intensiveness of items. There was a growth in the number of the progressive technological processes being introduced. During the period when the experiment was being conducted a considerable amount of work was carried out in the associations on assimilating new types of products--47 new brands were assimilated, including 32 brands assimilated in the USSR for the first time.

Of course, what has been achieved is not the result of the influence merely of the experiment which was conducted, but it can be stated with confidence that it has made a significant contribution to improving the work of the associations. The value of the economic experiment lies in the lessons which can be drawn from it. Attention has been drawn to the problem which the experiment did not solve, but it did formulate the necessary approaches to it. What we are talking about is the fact that, in reducing the number of design and process-engineering services by more than 11 percent, there was not a significant increase in the volume of design and process-engineering developments. Among the causes of the situation which has been created we can cite the presence in science of casual persons, who represent a kind of ballast for it, as well as the irrational nature of the quantitative and qualitative relations between the developers of ideas of technical progress and the performers.

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2384

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LABOR

NEW RETIREMENT BENEFITS FOR KOLKHOZ PENSIONERS DETAILED

Riga SOVETSKAYA LATVIYA in Russian 27 Aug 85 p 4

[Article by I. Ludviga, public consultant on questions of social security:  
"News About Pensions"]

[Text] The CPSU Central Committee, the USSR Council of Ministers and the AUCCTU adopted the resolution entitled "On the Priority Measures for Improving the Material Well-Being of Pensioners and Families and Increasing Care for Elderly Citizens Living Alone," which becomes effective on 1 November of this year. It provides for an increase in the pensions of workers, employees and their families which were granted on the basis of the Law on State Pensions, as well as the pensions granted on the basis of the resolution of the USSR Council of Ministers dated 20 July 1964 to the chairmen, specialists, chief (senior) bookkeepers and machine operators of kolkhozes 10 or more years ago in the sum of up to 60 rubles a month. The purpose of this measure is to bring these pensions up to the level of the pensions presently granted to workers in analogous professions and qualifications.

An increase in the minimal amounts of pensions paid to members and former members of kolkhozes, to whom pensions were granted on the basis of the Law on Pensions and Subsidies to Kolkhoz Members, was also provided.

Effective 1 November of this year, the minimal amount of the pension paid to kolkhoz members because of old age, disability of the II group, or loss of supporter for two non-working family members will be 40 rubles per month. Invalids of group I and families with three or more family members who cannot work will receive 60 rubles a month. Those with one family member unable to work will receive 25 rubles per month, and group III invalids who suffered their disability as a result of labor-related accident or work-related illness will receive 21 rubles a month.

All pensions whose amounts are below the newly established minimal values will be recomputed in connection with this measure.

State pensions for old age, group I and II disability, and for loss of supporting member for two or more non-working family members will be increased by one percent of the wage from which the pension was granted or subsequently recomputed (from a higher wage), as will be the pension for every full year elapsed since granting (recomputation) of the pension. The pension granted for loss of the support for one non-working family member will be increased by 0.5 percent of the wage from which it was granted (recomputed).

The basic amount of old age pensions, i.e., without bonus payments, will be increased. Thus, because the pensions for group I and II disability, including those for armed forces members and for loss of support for two or more non-working family members, are figured as a percentage of the basic amount of the old age pension and depending on the earnings and the number of years elapsed since granting (recomputation) of the pension, the amount of these pensions will also be increased.

The amounts of pensions granted for partial work service time will also be increased accordingly.

The order of increasing the basic amount of the old age pension.

The increase in the basic amount of the old age pension will depend on the earnings from which the pension was computed (recomputed) and the number of years elapsed since the pension was granted (recomputed). Considering this fact, pensions in amounts of less than 60 rubles will generally be increased, as well as pensions whose amount is greater than 60 rubles, depending on the number of years elapsed since the pension was granted (recomputed).

If the pension is computed from earnings of up to 120 rubles, then the percentage for every year elapsed since the pension was granted is computed from the actual earnings and added to the basic amount of the pension.

EXAMPLE: An old age pension is granted based on earnings of 100 rubles. Its amount is 55 rubles ( $100 \text{ rubles} \times 55 \text{ percent} = 55 \text{ rubles}$ ). A period of 20 years has elapsed since the pension was granted. The basic amount of the old age pension as of 1 November of this year will be 75 rubles ( $100 \text{ rubles} \times 20 \text{ percent} = 20 \text{ rubles}$ ;  $55 \text{ rubles} + 20 \text{ rubles} = 75 \text{ rubles}$ ).

If the pension computed from the earnings does not reach the minimal amount of 50 rubles, then it is paid out in the minimal sum--50 rubles, although the sum of the increase is added not to the minimal amount, but to the basic amount of the pension computed from the earnings.

EXAMPLE: An old age pension is granted based on earnings of 70 rubles. Its amount comprises 45 rubles 50 kopeks. However, since this is below the minimal amount, the minimum is paid--50 rubles. Fifteen years have elapsed since the granting of the pension. In this case, the sum of the increase (10 rubles 50 kopeks) is added not to the minimum, but to the basic amount of the pension, i.e., to 45 rubles 50 kopeks. The basic amount of the old age pension as of 1 November of this year will be 56 rubles ( $45 \text{ rubles } 50 \text{ kopeks} + 10 \text{ rubles } 50 \text{ kopeks} = 56 \text{ rubles}$ ).



However, the legislation provides that the basic amount of an old age pension computed from earnings greater than 120 rubles a month, with an equal number of years elapsed since granting of the pension, cannot be lower than the amount of the pension computed from earnings of 120 rubles per month. Based on this, pensions granted in amounts higher than 60 rubles are also subject to increase (this depends on the number of years elapsed since the pension was granted or recomputed). In connection with this we must clarify the fact that the basis for increasing the amount of the old age pension in all cases, regardless of the earnings over 120 rubles on which the pension is computed, is only the earnings of 120 rubles and the amount of the old age pension is 60 rubles. This means that in all cases, if the pension is computed from earnings over 120 rubles, the percentage for each year elapsed since the pension was granted is computed only from the earnings of 120 rubles and added to the amount of the pension, i.e., to 60 rubles. (120 rubles x 50 percent = 60 rubles).

EXAMPLE: 1. An old age pension is granted based on earnings of 120 rubles a month. Its amount is 60 rubles (120 rubles x 50 percent = 60 rubles). Twenty years have elapsed since the pension has been granted. The basic amount of the old age pension as of 1 November of this year will be 84 rubles (120 rubles x 20 percent = 24 rubles; 60 rubles (basic amount of old age pension) + 24 rubles = 84 rubles).

2. An old age pension is granted based on earnings of 140 rubles. Its amount is 70 rubles (140 rubles x 50 percent = 70 rubles). Twenty years have elapsed since the pension was granted. The basic amount of the old age pension as of 1 November of this year will also be 84 rubles (60 rubles + 24 rubles = 84 rubles).

3. An old age pension is granted based on earnings of 180 rubles. Its amount is 90 rubles (180 rubles x 50 percent = 90 rubles). Twenty years have elapsed since the pension was granted. In this case, the amount of the pension as of 1 November of this year will not be increased, since it is higher than the amount of the pension computed from earnings of 120 rubles.

The order of increasing the amount of pensions paid to group I and II invalids.

Increasing the indicated pensions is done in the following order: first, depending on the years elapsed since the pension was granted and the earnings, the new basic amount of the old age pension is computed. Then, the amount of the disability pension is figured on a percentage basis from the new basic amount of the old age pension. (Invalids of group I and invalids of group II suffering from work injury or work-related illness are granted 100 percent of the amount of the old age pension. Group II invalids suffering from general illness are granted 90 percent, and invalids of group I with work injury or work-related illness are granted 110 percent of the old age pension).

EXAMPLE: A group II disability pension based on reasons of general illness is granted based on earnings of 115 rubles a month. Its amount is 51 rubles 75 kopeks. Eleven years have elapsed since the pension was granted. Effective 1 November of this year, the amount of the disability pension will be 63 rubles 14 kopeks. It is computed as follows: 57 rubles 50 kopeks (the amount of the

old age pension based on earnings of 115 rubles) + 12 rubles 65 kopeks (i.e., 11 percent of 115 rubles) = 70 rubles 15 kopeks--the new basic amount of the old age pension. Since the group II disability pension based on general illness is computed in the amount of 90 percent of the old age pension, in this case its amount as of 1 November of this year will be 63 rubles 14 kopeks (70 rubles 15 kopeks x 90 percent = 63 rubles 14 kopeks).

No provision has been made for granting group III invalids a pension increase as of 1 November of this year.

The order of increasing the amount of pension due to loss of supporting family member.

The amount of the pension issued for loss of supporting member with two non-working family members (dependents) will be increased in the same way as the pension for group II invalids, and with three or more family dependents--in the same way as for group I invalids.

The amount of the pension granted for loss of support with one dependent family member will be increased by 0.5 percent of the wage from which it was computed for every year elapsed since the pension was granted.

EXAMPLE: A pension for loss of support due to general reasons of illness for one non-working family member is granted based on earnings of 200 rubles. Its amount is 34 rubles (200 rubles - 40 rubles = 160 rubles; 40 rubles x 45 percent = 18 rubles, from the remaining earnings 160 rubles x 10 percent = 16 rubles; 18 rubles + 16 rubles = 34 rubles). Ten years have elapsed since the pension was granted. Effective 1 November of this year, the amount of the pension will be 44 rubles (34 rubles + 10 rubles = 44 rubles).

Subsequent recomputation of pensions will be performed every 2 years. In this case, old age pensions, groups I and II disability pensions, and pensions granted due to loss of support for two or more non-working family members will be increased by 2 percent of the earnings, and for one family member--by 1 percent of the earnings.

Effective 1 November of this year, the minimal amounts of pensions which have been paid out for no less than 10 years will be increased:

--old age pensions, group II disability pensions, and pensions granted due to loss of support for two non-working family members will be increased from 50 to 55 rubles per month;

--pensions granted due to loss of support for one non-working family member will be increased from 28 to 31 rubles.

As a matter of information, we report that pensioners who will have the right for a pension increase will receive that increase without petition by the pensioner.

12322

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LABOR

CARTOON COMMENTARY ON PROBLEM OF WORK IDLENESS

Moscow TRUD in Russian 28 Aug 85 p 4

[Cartoon]



— Эта штука простаивала, а  
он приспособил, чтоб будила  
на обед...

Рис. И. НОРИНСКОГО.

--This thing has been standing idle, but  
he has adapted it to wake him for lunch...

Drawing by I. Norinskiy

/8309  
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LABOR

ALCOHOLISM SLOWS PRODUCTIVITY AT RSFSR SHIPPING LINE

Moscow TRUD in Russian 15 Sep 85 p 2

[Unsigned article: "In the CPSUDD Party Control Committee"]

[Text] On serious shortcomings in fulfilling the decisions of the party and the government about intensifying the struggle against drunkenness and alcoholism in the enterprises and organizations of the Yenisey river shipping line of the RSFSR Ministry of the River Fleet

An investigation conducted by the CPSU Central Committee Party Control Committee established that the heads of the Yenisey river steamship line and of its enterprises and organizations, despite the demands of the party and the government, did not conduct a real struggle with the manifestations of drunkenness in labor collectives. They did not draw the necessary conclusions even after the adoption of the CPSU Central Committee's decree entitled "On Measures for Overcoming Drunkenness and Alcoholism."

The administration of the steamship line, the river basin trade union committee and the party and trade union organizations of many enterprises, ports and ships approached the drawing-up of measures to strengthen the struggle against drunkenness and alcoholism formally, without directing them at a thoroughgoing eradication of this evil among river transport workers.

The head of the steamship line, comrade A. A. Pechenik, and his deputies weakened the demand for strict observance of labor discipline and acquiesced to violations of the Code of Service on Vessels and Navigational Safety. The number of violations of labor discipline in the last two years has not decreased. Last year every third steamship line worker committed violations of labor discipline. Absenteeism was the most widespread abuse. Last year absences were almost three times the average for the industry. More than half of them were connected with drunkenness. During this time a significant number of navigators lost their licenses, of these every fourth for being on watch in a drunken condition. In this steamship line two times more fleet commanders lost their credentials than the average for the ministry. Many ship captains don't only not try to stop cases of drunkenness, but even conceal them. Ships' commands often participate in drinking sessions with subordinates.



At a number of enterprises of the steamship line an atmosphere of intolerance toward drunkenness has not been created. The number of persons sent to drying-out facilities is not decreasing. The examination showed that leaders of the steamship line and vessels do not exhibit efficiency in identifying persons who tolerate drunkenness at work stations. The measures prescribed in the Law on Labor Collectives are not being applied to disorganizers of production. Cases of tolerance and of a condescending attitude toward drunkards and discipline violators have not been eliminated.

The river basin trade union committee (chairman comrade N. E. Podporin) is assuming a passive position in the work of overcoming drunkenness among river transport workers. He does not display the necessary exactingness toward trade union and economic organization leaders in the all-out strengthening of labor discipline in the collectives and in establishing order in production. The river basin committee and many trade union organizations are not exhibiting due concern for improving working conditions for ship crews, port workers and ship builders. Due attention is not being devoted by them to improving the operation of cultural and educational institutions and to creating a basis for the development of mass sport.

The medical personnel of the river-basin hospital are poorly utilized by the steamship line administration and the river basin trade union committee in the struggle against drunkenness and alcoholism.

There are serious shortcomings in the activity of the administration workers supply of the steamship line (headed by comrade D. V. Yermakov). It reduced the entire work of implementing the decisions of the party and the government on strengthening the struggle against drunkenness and alcoholism solely to reducing the points of sale of alcoholic beverages. At the same time, the necessary measures are not being taken in reconfiguring the stores and expanding the trade in non-alcoholic beverages, in organizing tea rooms and cafes and in selling juices and ice cream in ship stores and on passenger vessels.

Many party organizations of the subdivisions of the steamship line focus little attention on strengthening the struggle against drunkenness among river transport workers, don't conduct broad explanatory work and don't take decisive measures to eliminate this shameful phenomenon among communists.

In the resolution, adopted as a result of the investigation, the Party Control Committee noted that the administration of the Yenisey river steamship line, the river basin trade union committee, the heads of enterprises, and many primary party and trade union organizations are unsatisfactorily fulfilling the demands of the CPSU Central Committee and USSR Council of Ministers decrees on drunkenness and alcoholism and do not ensure the implementation of all the measures envisaged by the legislation on the struggle with this evil.

For failing to take proper measures in carrying out the CPSU Central Committee decree "On Measures for Overcoming Drunkenness and Alcoholism" in the collectives of the steamship line as well as for not improving the activity of cultural and educational institutions, comrades A. A. Pechenik, N. Ye. Podporin, and D. B. Yermakov were given strict party penalties.

Consideration was taken of their declaration that the struggle against manifestations of drunkenness among river transport workers of the steamship line will be strengthened.

The attention of the party secretary of the party buro of the administration of the Yenisey steamship line, comrade V. A. Ivanov, was directed to the need to strengthen exactingness toward the communists of the apparatus for ensuring the implementation of the decisions of the party and government on overcoming drunkenness in the subdivisions of the steamship line.

The Party Control Committee of the CPSU Central Committee noted that the RSFSR Ministry of the River Fleet (comrade N. G. Smirnov) and the Central Committee of the trade union for maritime and river fleet workers (comrade O. A. Sychenikov) did not take the necessary measures in restructuring the work of retail organizations and cultural and educational institutions in light of the demands of party and government decrees on strengthening the struggle against drunkenness and alcoholism.

Consideration was taken of the declaration of comrades N. G. Smirnov and O. A. Sychenikov that monitoring of the activities of the Yenisey river steamship line by the ministry and the trade union central committee will be strengthened and that help will be afforded the leaders of this line in organizing the implementation of the decrees of the party and the government on the struggle with drunkenness and alcoholism.

The CPSU Central Committee Party Control Committee assigned the Krasnoyarsk party kraykom to examine the question of the responsibility of other communists - leaders of the enterprises and organizations of the Yenisey river steamship line - for their failure to adopt proper measures for stopping drunkenness in labor collectives.

12961/12790  
CSO: 1828/235



## LABOR

### COMPOSITION, QUALITY OF UZSSR LABOR FORCE ASSESSED

Moscow ARGUMENTY I FAKTY in Russian No 38, 17 Sep 85 p 2

[Article by M. Akhunova, corresponding member of the Uzbek Academy of Sciences: "The Authority of a Worker"]

[Text] In their hostile propaganda aimed against the USSR, bourgeois ideologists have been very zealous in representing the Soviet workers in a distorted sense and in playing down their role in the life of our society. Our ideological opponents have particularly attacked the workers from the indigenous nationalities of the Central Asian and Transcaucasian Republics. The "Sovietologists" of various stripes have touted the supposed slow quantitative and qualitative growth of the workers in the former Russian borderlands and their "labor and social passivity" and have endeavored to set the workers of the indigenous nationalities against the Russian workers.

These notions are very far from reality. They are refuted by many facts, in particular those taken from the life of Uzbekistan.

#### Quantitative and Qualitative Growth

Our nation has always paid enormous attention to the growth of the nationality detachments of the working class. Due to the concern of the Communist Party at present workers comprise the largest social group in all the Union republics, including Uzbekistan, where the proportional amount of workers among the employed population is 53 percent. While in 1920, here there were only 20,000 workers and white collar personnel, at present in the republic economy around 4 million workers are employed, a larger portion of which is comprised of representatives from the indigenous nationalities.

In terms of their composition, the labor collectives are becoming more and more international. Thus, the Aviation Production Association imeni V. Chkalov employs representatives of 50 nationalities, at Tashelmash [Tashkent Agricultural Machine Building] there are more than 40, at the Tashkent Textile Combine some 41 nationalities, and so forth.

At present, living in the republic are the representatives of over 120 nations and nationalities, 112 of which are represented in the ranks of the Uzbek working class.

Also noteworthy is the fact that workers from our republic have participated and are participating in building important industrial projects in Syria, Nepal, Guinea and Mozambique, India and Afghanistan, Algeria and Cuba and in many other countries.

Each year the republic improves and betters the training of highly skilled worker personnel. While in 1970, some 342,500 workers were trained in new professions or improved their skills directly at the Uzbek enterprises, in 1984, the figure was over 1 million workers.

The vocational educational system is being enlarged year by year. From 1976 through 1984, over 300 new PTU [vocational-technical school] were opened in the republic. Over this time, they trained more than 1 million workers.

In 1984, over 1 million women were employed in the Uzbek economy.

#### Concern for All

Completely falacious are the assertions by bourgeois propagandists on the supposed labor and social passivity of our workers. As is known, participation in the socialist competition is the most important indicator of labor activity. In this regard the following figures could be given. The total number of participants in the socialist competition in Uzbekistan reached 4.5 million persons in 1984. During these days millions of republic workers are working under the motto "Twenty-Seven Shock Ten-Day Periods for the 27th CPSU Congress!"

The workers are taking an active part in the struggle for technical progress. This is clearly apparent in the development of the movement of production innovators, rationalizers and inventors, encompassing virtually all industrial enterprises. Thus, the economic effect from the introduction of inventions and innovation proposals in 1984 was 300 million rubles in comparison with 101.5 million rubles in 1976. Around 200,000 republic workers are members of the All-Union Society of Innovators and Inventors and around 50,000 are actively working in the scientific-technical societies.

The participation of the workers in production management has risen particularly after the passage of the Law Governing Labor Collectives.

Cannot the leading role of the working class in the life of our society be seen from the fact that the number of communist workers has been constantly rising in the membership of the bureaus and plenums of the obkoms, gorkoms, raykoms and the Central Committee of the Uzbek Communist Party?

Republic workers are also widely represented in the soviets. Some 28 of their representatives were elected deputies of the superior state body of the USSR. In the Uzbek Supreme Soviet there are 162 workers, or 31.8 percent of the total number of deputies. Workers are also playing a leading role in trade unions, comprising the main core of their aktiv.

A clear manifestation of the high sociopolitical activity of the republic working class is worker participation in the measures aimed at strengthening

state and production discipline. In their speeches at the meetings of worker collectives and in the press they decisively demand greater responsibility for absences without leave and tardiness and dealing more strictly with officials who organize things poorly and do not seek to improve labor and living conditions. In the worker collectives there has been a widespread struggle against the abusers of alcohol. Thus, in the shops of the Andizhan Machine Building Plant there are 20 comrade courts and here a commission to combat drunkenness and alcoholism is working successfully. The strengthening of discipline in the collectives has told favorably on reducing personnel turnover which has dropped significantly recently.

#### Problems and Shortcomings

What has been said, of course, does not mean that such a complicated process as the strengthening of the leading role of the working class in the life of Soviet society has occurred smoothly, as they say, without a hitch and without problems. On this important matter there are both problems and shortcomings.

For example, there are many of them in the organizing of the socialist competition among the workers. As was pointed out at the 16th Plenum of the Central Committee of the Uzbek Communist Party, in this important concern one still encounters formalism and a superficial approach is permitted in determining the results of the competition. Many trade union and economic organizations do not give proper importance to the material encouraging of the winners. Thus, in 1984, with sectorial recommendations of 10 percent, 4.2 percent and 4.6 percent of the total material incentive fund, respectively, were used for these purposes at the production associations of Sredazkabel [Central Asian Cable] and Sredazelektroapparat [Central Asian Electrical Equipment]. Oversights in the organizing of the socialist competition reduce the creative activity of the workers and weaken their interest in the labor competition. This largely explains the fact that over 200 production collectives have not met the 1984 plan.

Or take the problems related to introducing inventions and innovative proposals into production. At present, unfortunately, it takes an average of at least 5 years from an idea to its introduction. Clearly such a situation does not contribute to the development of worker activity.

Much still remains to be done, as the party demands, to involve all the workers in constant active participation in solving social matters.

Of course, it is essential to raise the role of the working class in accelerating scientific and technical progress, in introducing new equipment into production and involving the workers in production management. All of this are long-range problems. Our press writes openly about them. They are the subject of discussion at meetings of labor collectives. The party and state bodies as well as the community are constantly concerned with solving them.

Negative phenomena, omissions and shortcomings, in spite of the assertions of bourgeois ideologists, do not, however, change the general picture. In Uzbekistan, as throughout the nation, a continuous process is underway of increasing the production and sociopolitical role of the multinational working class, the leading force of the socialist society built in the USSR.

## EDUCATION

### FIRST YEAR OF SCHOOL REFORM IN LATVIA APPRAISED

Riga KOMMUNIST SOVETSKOY LATVII in Russian No 8, Aug 85 pp 97-100

[Unsigned article: "First Year of School Reform"; for earlier article on subject see JPRS USSR REPORT; HUMAN RESOURCES No JPRS-UHR-85-016, 27 Aug 85 pp 41-50]

[Text] Less than a month remains before the start of the new school year when millions of the children of our country will sit behind desks. It will open with an all-union holiday--of Knowledge Day, which was celebrated for the first time last year. A great deal, a very great deal is now happening in school for the first time. The school reform is only a year old, but it is intended for a long time and provides for a significant reorganization of the general educational system and vocational training of the pupils. As was emphasized at the April (1985) Plenum of the CPSU Central Committee, which spelled out the tasks of acceleration of social and economic development of our society, the importance of the started school reform is difficult to overestimate for the future of the country. And the concern for its implementation and for further improvement of study and education of the young generation and preparation of pupils for life and labor, is a universal, an all-people's concern. It applies to every collective and to every Soviet individual.

The reform demands radical improvement of the preparation of school children for labor and universal compulsory secondary education of young people to supplement vocational education. During the past school year, basic practical guidelines were outlined of uniting instruction with productive labor. Each school has its own base enterprise or organization. A total of 1,353 enterprises and organizations, representing all sectors of the republic's national economy, are base enterprises and organizations. This makes it possible to conduct vocational training of pupils while taking into account the needs of the national economy and the interests of the pupils.

The statute on the base enterprise spells out its tasks relative to the creation of a necessary material base for the vocational training of pupils of the general educational school and their involvement in productive labor. In the approved list of vocations which children can study, 768 are mass vocations. Schools, jointly with base enterprises, need to choose vocations which better meet local conditions and are mastered by school children. A



statute was approved on pay for the labor of pupils at the time of labor training and production practice.

It is significantly important to continue in the new school year the creation and equipment of training shops and sections at base enterprises or in schools, depending on actual conditions. Moreover, they should be equipped not with obsolete, written-off equipment, but with the most modern. As of 1 September 1986, schools will operate according to a new educational plan which provides a significant increase in the number of study hours assigned for labor training and production practice. By this time schools and base enterprises should have a concrete, materially provided program of unification of study with productive labor.

Our republic has long-standing good traditions of familiarizing children with the affairs and concerns of grown-ups and involving them in socially useful labor in their nonstudy time. Solid cooperation of schools and labor collectives has been formed in a whole series of rural rayons of the republic. Specialists from agriculture and fishery kolkhozes supervise more than 1,200 groups where about 20,000 pupils are engaged. In Madonskiy Rayon, for example, 60 percent of the pupils of 4th-year to 11th-year classes were engaged last year in various agricultural-type groups. This helps to accustom children to rural labor, inculcates a tie to the soil, provides the possibility of disclosing their abilities and makes it possible for them to try their powers out in technical work connected with agriculture as well as in the end to consciously select a vocation and a job according to their liking. Heads of groups and farms encourage in children the desire to become agricultural specialists. Rayon agroindustrial associations allocate funds for stipends for the training of those sent from kolkhozes and sovkhoses to rural educational institutions. The experience of Stuchkinskiy Rayon deserves support and dissemination. Here a stipend is given to those graduates of the rayon's schools who study in higher educational institutions and in other specialists needed for the countryside. Attention is drawn to this in the decree of the CPSU Central Committee adopted in June of this year "On Measures for Improving the Use of Club Institutions and Sports Facilities" where the need is emphasized of sending more stipend receivers from enterprises, kolkhozes and sovkhoses to educational cultural and physical-culture institutions.

In the past year, the first steps were taken in organizing vocational training and productive labor of pupils at base industrial enterprises of Riga, Daugavpils, Yelgava and other cities. The children here worked several hours a week in shops of plants and factories. A specially serious approach was made to this at Yelgava Plant of Agricultural Machinery, which equipped at the enterprise two training shops, where 120 pupils master different worker specialties. The plant's collective, its management and party organization see in working maturation, labor education of children, strengthening of the tie between school and production and a significant share of their concern for prospects of the enterprise's growth and for the development of our economy as a whole. The help given to a teenager to undergo serious labor conditioning in a worker collective and to inculcate respect for it and a desire and ability to work means to help him enter a dependable path in life. And it is not excluded that this path will subsequently result in today's pupil becoming

a worker, technician or engineer at the enterprise where he first became familiar with real adult labor.

The realization of a large social program of training of the young generation for life and labor presupposes a diversity of organizational forms of labor training and vocational education of school children--from training shops, sections and pupils' production brigades at enterprises to educational-production combines, school workshops and various kinds of auxiliary farms. This depends on actual local conditions and the already accumulated experience of cooperation of schools and vocational-training schools with labor collectives. In Yelgava, for example, a new building has been built for an interschool educational and production combine, the classrooms of which were equipped by the city's enterprises. They jointly with the schools have concerned themselves with the selection of foremen under whose supervision the children will master different specialties. At Tsesis General Construction Trust, the first training grounds were created in the republic. They will serve as a base for the training of construction cadres and the labor training of pupils of vocational-technical schools and the general educational schools.

In organizing the labor of pupils, it is necessary to keep in mind not only the economic side and the practical result but also the profound moral influence on the development of the pupil's personality. It is important that labor brings satisfaction to the children and elevates them in their own eyes and in the eyes of those around them. The search for ways of improving labor education and vocational training of pupils will produce the best results then when school children participate in labor directly in the sphere of material production on the basis of organizational units of enterprises, kolkhozes and sovkhoses. This makes it possible to avoid substitution for labor of "play in labor" or reducing it to monotonous auxiliary work. It still sometimes happens that school children perform work which is unsuitable to workers of base enterprises. In some rayons (Tukumskiy, Limbzhskiy, Yekabpilsskiy), pupils engage in the fall and spring for a long time in harvesting and sorting potatoes and clearing fields of stones. There should be recalled in this connection the instruction of the CPSU Central Committee and the USSR Council of Ministers forbidding pupils to be diverted during the school year to agricultural and other work not connected with the educational process. As for involving school children in taking in the harvest and other agricultural work, it is necessary to use the time which is specially assigned to labor practice.

Improvement of school work includes enhancing the role of vocational-technical schools in providing young people with vocational and secondary education and expansion of their network. Whereas in 1984 about 30 percent of the graduates of the 8th-year class went to study in secondary vocational-technical schools, by 1990 their number should reach approximately 40 percent. The task is being set of providing all sectors of industry as well as all rural rayons with their own vocational-technical schools. This means that in the course of 8 years of study at a general-educational school, children will have to essentially make a selection of their future vocation. For this reason it is so important for schools together with labor preceptors of base enterprises to help in close contact with parents each youngster to correctly determine his path. Unfortunately, as yet this selection is more frequently influenced by

uncontrolled factors rather than by the considered and purposeful influence of the school in cooperation with parents. Weak vocational orientation leads to the fact that each year many pupils discontinue study at one educational institution in order to renew it only the next year at another. To know the interests of a pupil, to awaken inclinations, to develop abilities, to assist him to avoid mistakes in determining his future vocation and to actively influence the right choice constitute an extremely pressing task of the school.

In the solution of this problem working contacts of schools and vocational-technical schools are particularly important. The experience of such cooperation is already accumulating. Many general educational schools use the teaching base of vocational-technical schools in labor training of pupils. But here there are still many unused possibilities. It is clear that placing the cooperation of schools and vocational-technical schools on a working basis would be aided by contracts on cooperation among them, including a broad group of vocational orientation and educational measures, technical creative work and artistic amateur activity of pupils and sports work.

There are still many complex and unsolved problems of uniting instruction and labor. The reform requires each pupil from the first to the graduating class to undergo serious conditioning in socially useful productive labor. But while the forms of such work have on the whole been determined for senior-class students, there is as yet no such experience of participation in productive labor by 5th-year and 6th-year pupils and particularly by pupils of junior classes. For this reason, searches for acceptable forms and selection of operations for labor training of pupils of junior classes are so important.

A serious role in the inculcation of the key moral trait in forming the personality of love of work and its awakening of creative forces must be played by the considered organization of the leisure time of pupils and their involvement in various mass and individual forms of extracurricular work--clubs based on their interests and groups of technical and artistic creative work and sports sections. Special attention was directed to this in the decree of the CPSU Central Committee "On Measures for Improving the Use of Club Institutions and Sports Facilities." It provides for granting to pupils of schools and vocational-technical schools of free use of cultural and sports complexes, clubs, palaces and houses of culture, stadiums, swimming pools, sports halls and ground and the organization of children's and teenager clubs at places of residence. For interesting, absorbing work is the best way of forming an active life aim for a growing individual and a lasting counterweight to various harmful, and at times, dangerous, temptations. We should in particular increase antialcohol education of pupils. Medical personnel quite definitely say: alcohol should be completely eliminated from the life of young people. Each instance of consumption of an alcoholic drink by a youth or adolescent must be considered as an extreme happening.

The republic has much positive experience in the organization of free time of children and involving them in useful work, which actively influences their life aims and frequently saves them from tossing back and forth in the choice of a vocation. VEF [Riga Electrical Equipment Plant imeni V.I. Lenin] Production Association has seriously and farsightedly approached this matter.



Two years ago, on the initiative of the association's DOSAAF Committee, which actively supported management and the party committee, a special three-story building was erected for the work of sections of radioautomatics, robot equipment, radio, television designers [radiotelekonstruktory] and programmers. All the rooms are equipped with the latest equipment. The sections are open for everyone wanting to learn--school children and pupils of vocational-technical schools--and it operates the year around, not stopping lessons even during vacation time. Experience of using sports facilities for classes of children and youngsters has been acquired in Kirovskiy Rayon of Riga. Cultural and sports complexes being created today in the republic can be of great help in this work. Here we need the cooperation of school, komsomol, sponsoring labor collectives and the concern and coordinating role of local soviets.

The school reform makes increased demands on the teacher and acutely raises the problem of improving the quality of education and upbringing. Success of the reform depends primarily on the knowledge and skill of the teacher and on his creative attitude toward the work. A great deal is already being done. The mania of percentages, we can say, is a thing of the past. But at the same time it would be wrong to solely relate to it the low-level of knowledge of a portion of the pupils. At times it is due to the methodological weakness of the teacher. For this reason the problem of problems is achieving a sharp rise in the methodology of instruction, quality of lessons, extracurricular work on subjects, preparation of olympiads and individual work with lagging students. The school must arm pupils with solid knowledge of the fundamentals of the sciences and the most important achievements of contemporary science and technology and strengthen the ties of study with contemporary production.

An urgent task of today is liquidation of computer illiteracy of school children. In the decree of the CPSU Central Committee and the USSR Council of Ministers adopted on this question, mention is made of the necessity of wide-scale introduction of electronic computer equipment in the educational process. As of 1 September of this year, a new subject in 9th-year classes--bases of informatics and computer equipment--is intended to provide computer literacy for pupils. As was emphasized at a conference at the CPSU Central Committee on questions of accelerating scientific and technical progress, microelectronics, computer technology and the entire informatics industry are a catalyst of modern scientific and technical progress. And for whom else but those who are bound in a certain amount of time to stand at the wheel of this progress will it be important to know from the school years how this catalyst works. The decisive factor of all changes, as was stated with tremendous force at the conference at the CPSU Central Committee, is the human factor. And school is a very important element in developing in the forming individual a desire and ability to promote these changes.

A new undertaking under the conditions of the school reform is the education of children from six years of age. The implementation of this task is connected with many problems on the organizational and pedagogic level. It is necessary to ably utilize the experience accumulated in recent years of preparing children for study in school. During the last school year there were in operation 267 preparatory classes attached to 193 schools in the republic. A most important task for the immediate future is to see to it that



all 6-year old children study either in the preparatory classes of schools or in children's preschool institutions.

In order to solve this problem, it is necessary to create the necessary conditions--to set aside the required quarters for the new classes in schools and to expand the network of kindergartens. This is connected with the building of annexes to schools, the expansion of their area by making housing available to personnel of schools frequently living in schools quarters. Here the schools need active assistance from local soviets. Due to the new requirements, plans for construction of schools have been revised. They provide the necessary quarters for 6-year olds, shops and physical-culture halls. Plans have also been worked out for annexes to different types of buildings. For rural areas, plans of complexes for a kindergarten--elementary school, the construction of which in the new five-year period is specified by many kolkhozes and sovkhoses. This will make it possible to more productively solve the questions of continuity of education and cooperation of school with preschool institutions.

During the first year of the school reform a great deal of organizational work was done on implementing the program of reorganization of public education worked out by the party. Progress of further realization of the program will require determined efforts of party, soviet and economic organs, trade unions and the komsomol and of every school and every labor collective. Success will depend on their coordinated actions, on strengthening the union of school with family and on increasing demands on parents for the upbringing of their children as well as on the part of the school and on the part of the collectives where they work.

The reports and talks on the results of the first year of the school reform (for more details on the course of its realization in the republic, see the article by Latvian SSR Minister of Education A. Buylis "First Year of School Reform" in No 5 of our journal for this year) among production collectives of town and country need to be supplemented by an analysis of what work they accomplished during the year and of the problems which have to be solved. It is necessary to carefully and exhaustively disclose the fulfillment of contractual commitments of base enterprises and to show how the labor collective partially participates in labor instruction and vocational training of school children and in the creation of conditions for their productive labor and provision with experienced preceptors. The question should be elucidated what the connection of party organizations, the trade union and the komsomol is with schools and the extent of their demands on parents working in a given collective.

In the preparation of talks on the results of the first year of the school reform in educational institutions, it is necessary to show what already has been done for its realization at each school and each vocational-technical school. Special attention should be given to the content of

education, practical steps in raising the quality of instruction and education and participation of school children in socially useful, productive labor and in preparation for the transition to education of children from six years of age. It is necessary to outline those organizational and pedagogic problems which have to be solved in the new school year.

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## EDUCATION

### SHCHERBAKOV ON INITIAL RESULTS OF SCHOOL REFORM

Moscow UCHITELSKAYA GAZETA in Russian 31 Aug 85 pp 1-2

[Interview with S.G. Shcherbakov, USSR minister of education, by UCHITELSKAYA GAZETA correspondent: "The Reform. The Second Year."]

[Text] [Question] Dear Sergey Georgiyevich, school is on the eve of the new school year and the second year of the school reform. What did the first year produce? What preliminary conclusions can be made, what lessons can be drawn?

[Answer] Our school is starting the new school year at an especially responsible and difficult period. The party and the country are drawing near to the 27th CPSU Congress. The dedicated labor of the Soviet people at the junction of the 11th and 12th Five-Year Plans and implementation of the ideas of the reform of general educational and vocational schools are the chief factors determining directions in the work of the pedagogic collectives of institutions and personnel of educational organs in the approaching school year.

The traditional August teachers' conferences were the culminating stage of preparation for the new school year. At them, results of the past school year were studied and generalized and the results of work on embodying in practice the demands of reform of the general educational and vocational school were analyzed, and measures were examined for further practical realization of its directions.

One of the chief requirements of the reform is to bring the content of education and training of the rising generation into accord with the present level of scientific and technical achievements and the objectives of the country's social and economic reform and to ensure further qualitative growth of the whole educational system--an important constituent of acceleration of social and economic progress. It is indissolubly connected to activation of the human factor. School plays a decisive role in preparing children and youth, to whom the future belongs, for life and work. And not the distant but also the near future. Each year, there emerge from it young people who go into industrial production, into agriculture or construction, who enter VUZ's (in order to join the ranks of engineering and technical personnel, specialists of different type and young scientists).

I speak of these well-known things in order to emphasize how great our responsibility is in the fulfillment of the party's plans and in activating the human factor for the purpose of speeding up social and economic progress.

The first school year is behind us. It passed concentrating on the school reform. You ask, what conclusions can be made? Just preliminary ones--only the first steps have been taken in implementation of the reform. A long-term task has been set for the secondary general educational school, pedagogic schools and institutes to radically improve the quality of instruction and education of rising generations and their training for socially useful labor.

It is gratifying that a psychological breakthrough has occurred in regard to teachers, parents and school children in combining education with productive labor and in the vocational training of senior-class pupils. By the end of the last school year more than half a million senior-class pupils had received vocational labor training at 6,000 training shops directly at enterprises, more than 2 million at 2,700 educational-production combines and about 2 million at school workshops.

The Leninist principle has become dominant in today's school life. The children work eagerly. This is as a rule socially useful and productive, in a word, real labor. More graduates are now linking their life or are ready to link it with productive specialities, with labor in the city or in the country. The educational and technical base of labor training has been improved. Base enterprises have been attached to schools.

These undoubtedly are the positive results of the first year of the school reform. Still, they are only the first steps. Recently, the decree of the CPSU Central Committee "On Party Supervision of Work in Implementation of the Reform of General Educational School and Vocational School in Gorkiy Oblast" was published. This party document shows more fully the key problems of carrying out the reform. A principled, realistic assessment of the significant, and typical, defects of its fulfillment at the present stage was given.

At the present time, a portion of the school children does not have permanent workplaces. Cases are frequent where they have to study work trades on obsolete and sometimes simply old equipment of little use.

Present vocational forms of labor organization far from always include school children. Even when undergoing training at enterprises, school children frequently are not included in the life of the work collectives or komsomol organizations. Cases are frequent where base enterprises do not assist schools in organizing productive labor in school educational-production shops, do not give orders for manufactured articles and do not allot raw materials. Schools are experiencing even more difficulties in organizing the productive labor of children of secondary classes. Here, of course, heads of schools and educational organs ought to display more energy and determination in the solution of these questions.



Pupil production brigades continue to be the tested form, born of actual practice, of combining education with productive labor. The CPSU Central Committee in a message of greetings to the All-Russian Rally of Pupil Brigades rated highly the results of their work and their role in the labor training of rural school children. There are many examples of this. It is enough to at least cite the labor collectives of the school children of the Stavropol area--the birthplace of pupil brigades, Krasnodar Kray and Kostroma and Saratov oblasts. Yet frequently, for example in Kirghizia, Uzbekistan and Turkmenia, pupil brigades have been given the role not of industrious managers of fields, animal-husbandry farms or equipment but rather of seasonal workers replacing adults in labor-intensive operations. Unfortunately, and this is something especially intolerable, the children are taken away from their studies, and for long periods of time in cotton planting regions.

There is no doubt that the experience of joint friendly and coordinated work of schools and base enterprises and farms is expanding. There are many outstanding examples of labor vocational training of student youth. But I shall deliberately direct attention to defects in labor education and training. They exist as in the case of vocational orientation, which is frequently conducted unsystematically, separately from the real needs of cadres of a given region. One cannot close one's eyes to this. For the purpose of overcoming them, it is necessary to concentrate the efforts of schools and particularly of local educational organs, which are primarily responsible for the fact that they permit such serious defects.

[Question] Sergey Georgiyevich, how do you assess the reorganization of the training and educational process as a whole? What was accomplished in the past school year? What are the difficulties and unfinished work?

[Answer] A precise answer to this question is contained in the decree of the CPSU Central Committee on Gorkiy Oblast to which I have already referred: "The measures adopted for revision of the educational and training process at educational institutions are as yet not providing the necessary tempo of bringing school to a qualitatively new level."

The reorganization of the pedagogic process is proceeding very unevenly. Alongside with schools where collectives work creatively, purposefully, there are also the kind where stagnation, inertia and indifference reign. Hence poor lessons at which children do not add to their knowledge and do not acquire skills and abilities. The lessons are monotonous, boring, have no effect on either the mind or the heart of the child and do not contribute to its communist upbringing or personal molding. Banal patterns and formalism in study and education have as not not been eradicated just like attempts of other teachers to cover up their pedagogic blunders with an ostensible high success level.

We are also concerned with the quality of the knowledge of a large portion of the pupils. There are still no serious improvements here. Of course, this question cannot be solved all at once. The fact is that ignorance or inadequate knowledge sometimes has accumulated over the years and been veiled by that percentage mania. The question has been raised concerning this time

and again, but no serious measures have been taken. Even now, certain educational organs tolerate such negative phenomena.

We are likewise concerned with the lessening of interest on the part of children for the precise sciences, and it has become more difficult for engineering and technical VUZ's to choose the most knowledgeable and best prepared graduating students. This is particularly important in our time when the party has set forth a key task--acceleration of scientific and technical progress, growth of production efficiency and intensification of the national economy. The fact is that general educational training of youth, the polytechnical direction of knowledge, connection with life and combination of education with production labor constitute the foundation on which mastery of modern equipment, high labor productivity and a rationalizing approach are based. And if a desire for knowledge and interest in science, in technology, in technical work and the practice of self-education are not established when young, it would be difficult to expect that today's school children will grow up to be people capable of moving science and technology ahead. It is no accident that in describing the broad range of problems involving acceleration of scientific and technical progress Comrade M.S. Gorbachev mentioned the development of culture and education.

What then is needed to radically improve the quality of instruction and education and to raise the school children's level of knowledge? Radical improvement of the quality of teaching and education is directly linked to vital creative work and initiative, order and organization, personal responsibility and discipline of school personnel. We must see to it that every educational worker, teacher and foreman of production training is an active fighter for implementation of the ideas of the reform in practice.

To raise the quality of teaching and education of the rising generation is a complex task, encompassing in essence all sides of school operation: maintenance of education, its methods, direction of philosophical outlook, polytechnical and practical character and ties with life.

In reworking teaching plans, programs and textbooks for all courses, we take into account these requirements. The new teaching plan and programs have already been approved. They reflect more fully modern scientific and technical achievements and the experience of social development. Study of the laws of the natural and social sciences is more closely connected to their technical and technological application in pertinent sectors of the economy and in present-day production. Teaching programs and textbooks are being freed of excessively complicated and subsidiary materials. Their content will be more accessible to those for whom they are intended. The new teaching plan will be introduced gradually beginning with the 1986/87 school year with the creation of necessary conditions. The new programs should be implemented as they come out. On their basis, existing textbooks are being revised and improved and new ones are being created. Conditions have been worked out for organization of competitions for best textbooks. This will help in avoidance of mistakes permitted earlier when the textbooks suffered from significant defects, negatively influencing the quality of training of school children. Authors' collectives, methodologists and outstanding teachers are working on

their creation. All books for school children will undergo experimental verification and only then will become stable textbooks.

Program and textbooks, while very important, are still not enough. The main thing is the teacher, his ideological and theoretical level, erudition and professional skill. First of all, the further rise of quality of children's and young people's training depends on it. A psychological reorientation of teachers is needed. It is necessary for each one to learn to think and to work in a new way, conscientiously and with full payback. More creativity and initiative, personal responsibility and discipline!

Of course, the teacher needs the help of educational organs, methodological institutions and pedagogic science. And of school, rayon, city, party and trade-union organizations. And, of course, of school heads. But it is the teacher who gives the lessons, mixes with the children, it is he who works with the children's collective. And nothing can replace his individual influence on the children and interaction with pupil organizations--with the komsomol and pioneers.

This is why ideological educational work with the teacher and raising his professional skill and assistance in psychological reorientation and in ideological and spiritual enrichment is the problem of problems.

I should dwell particularly on a new subject which will be studied in the schools. I have in mind the course on fundamentals of informatics and computer technology. First of all, wide-scale explanatory work is needed among parents, the public and even the pupils themselves as to why the course is needed and is being introduced as early as in the 1985/86 school year.

It is dictated by the need of speeding up economic and social progress. Intensification of production, wide-scale introduction of electronic computer equipment and automation and flexible technologies require greater skilled personnel capable of taking advantage of the technology of the new generations. Computer literacy is becoming even now--and more further on--the second literacy of the contemporary man. We must not forget the philosophical importance of the new course and of its role in the development of logical thinking of young people.

What has been done by the USSR Ministry of Education, by republic ministries and local educational organs to introduce the new subject? The summer was spent in preparing physics and mathematics teachers who will teach the new discipline. For a long time, the teaching aid for school children was the methodological guide for teachers. It will be more difficult with computer equipment--not all the schools will be provided with it in the new school year. With the immediate participation and help of party, soviet, komsomol and economic organs in each rayon, it is planned to establish one or two base schools and at educational-production combines, institutes of further training and rural vocational-technical schools--subject rooms. The schools will also use for practical studies computer centers of various enterprises, scientific-research institutes and VUZ's.



The new course will be taught in the starting school year in 9th-year classes. Moreover the program and teaching aids have been so compiled that the youngsters will be able to assimilate it without extended use of computer equipment. The second part of the course--to be taught in 10-year classes--will be introduced beginning with the next 1986/87 school year. Here the pupils will be able to familiarize themselves with the basics of programming on an electronic computer. By this time, schoolrooms will be provided with the equipment. Of course, all this is not simple to organize. But the task is of such national-economic importance that we are obliged to apply all our efforts for its solution.

The documents of the reform provide for beginning to teach children in the 11-year school from 6 years of age. This will have to be done in the course of the 12th Five-Year Plan with creation of the necessary conditions. Even now children in a preparatory group study on the basis of experimental programs beginning with the 1st-year class of the 11-year school at a number of schools and kindergartens. Teaching documentation for classes and preparatory groups of 6-year olds is undergoing experimental verification. On this basis, it will be further polished as normative documents determining the organization and regimen of the pedagogic process. Special training is required for teachers and educators who will be dealing with the children. It is also necessary to create a suitable material base.

We believe that the organization of classes for 6-year olds cannot be artificially pushed there where the necessary conditions have not been created. But we cannot dawdle with it either.

I want to emphasize that the lesson, although this truth is commonly known, does not exhaust the contact of the teacher with the youngsters. It is not just a matter for the teacher to personally conducting extracurricular work, although this is necessary. The task of the pedagogic collective is to utilize the surroundings of the school, to seek out and to find for oneself intelligent and able assistants at base enterprises, at outside of school, cultural and sports organizations of the microrayon and among parents. We will have to achieve a radical improvement of work with children outside of school, especially at places where they live. For this, as pointed out in the above-mentioned party document, it will be necessary to develop a network of clubs and groups based on interests and to create conditions for scientific and technical work and for research and experimental activities of pupils.

It should also be emphasized that the pedagogic duty of the teacher, especially of teachers who are communists or komsomols, is to systematically aid school komsomol organizations in intensifying their work on ideological-political, moral, labor and physical training of youth. It is also very important to increase the activeness of pioneer organizations and organs of pupil self-government. The fact is that it is a common task of pedagogic and pupils' public organizations--to determinedly inculcate high moral qualities, mature discipline and a responsible attitude of the youngsters toward study and work.

Through able handling of lessons, teachers have to provide the youngsters with



time for studies based on their interests and with able organization of leisure time to help them utilize it as fully as possible.

[Question] In the light of the second year of the reform, how do the problems of school administration look?

[Answer] Local educational organs under the guidance of party committees have done certain work on school reform--both explanatory and organizational pedagogic work. A great deal has been done on work with personnel, on strengthening of the teaching material base and, the creation of conditions for teaching of 6-year olds and for labor training of school children.

But in many cases, rayon, city, oblast and other departments of education operate as of old. In a number of rayons, there is as yet no marked improvement in the style and methods of administration of schools. This does not help the elimination of formalism, percentage mania and other negative phenomena from school practice.

Our methodological services still do little to help teachers in improving the quality of lessons. Insufficient consideration is being given to work with heads of schools--to raising their ideological and political, theoretical and professional level.

Unfortunately, the red-tape bureaucratic character of administration at a number of educational organs has as yet been far from eliminated. The flow of papers, like the number of various meetings and conferences at different levels is slow in being reduced. Habituation to the old, to what has been outdated is great. It is necessary to look afresh at all these defects in administration of schools and at negative phenomena and all manner of blunders.

Our efforts must be concentrated on improving the teaching and educational process. It is necessary to improve the work of methodological associations, both school and rayon, and to create conditions for the creative growth of teachers and for their mastery of effective methods of teaching and educating children. Undoubtedly it is necessary to expand cooperation, exchange of experience and mutual aid among schools, vocational and technical schools and tekhnikums. Rural schools require special attention.

Critical comments were made by the CPSU Central Committee in the decree on Gorkiy Oblast both addressed to us and addressed to republic ministries of education and the Academy of Pedagogic Sciences.. Our common task is literally from teacher to minister to adopt additional energetic measures for realization of the school reform. This is the chief thing with which we must greet the 27th CPSU Congress.

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## EDUCATION

### TASKS OF SOVIET HIGHER EDUCATION FOR 1985 SUMMARIZED

Moscow VESTNIK VYSSHEY SHKOLY in Russian No 9, Sep 85 pp 3-7

[Editorial: "The New Academic Year at Higher Educational Institutions"]

[Text] Wherever you are, whatever your age, you still find yourself caught up in the solemn mood of this day. It is as if one becomes a participant in the ceremony which accompanies the first day of September, marking the beginning of a new quest for knowledge.

In the Soviet Union a great deal of attention has been and continues to be devoted to education. Virtually one in two of our country's citizens is studying in one fashion or another: learning a trade, broadening their own horizons, raising their level of skills. And on Knowledge Day this is particularly clearly visible: together with yesterday's graduates of schools and specialized educational institutions march their replacements, those persons who are crossing the threshold of an educational institution for the first time. They are all united by a yearning for knowledge, the desire to learn new things, to become a teacher or an engineer, an architect or a technician, a skilled worker or a doctor. All are united by their striving to become useful and productive members of society and to serve people. Their arrival at an educational institution is proof of their profound trust in their future teachers and mentors. Each beginner believes contact with these people and the very atmosphere of an educational institution will help him attain his cherished goal and become a specialist, a citizen and a Human Being.

To justify this trust is the highest civic and professional duty of workers in education. They are called upon to reveal to young generations the hoarded knowledge of mankind, help them become acquainted with the treasures of world culture, and help mold each individual as a specialist and, without fail, as a personality. This is necessary so that young people can accept and carry onward the inextinguishable flame of knowledge, human curiosity, inquisitiveness and humanism which forms the basis of the great ideals of a communist society.

This year Knowledge Day was observed in a situation reflecting the powerful influence on all aspects of our lives by important events: the April (1985) CPSU Central Committee Plenum and conferences in the CPSU Central Committee relative to matters of speeding up scientific and technical progress. The materials and decisions of the plenum and conferences have been studied and

are now being discussed in all VUZ collectives with great political enthusiasm, in an interested and businesslike manner. Right now higher schools are outlining ways to implement these decisions, tally up the results of fulfillment of the decisions of the 26th Party Congress and set in motion preparations for the 27th Congress.

Knowledge Day passed with much ceremony. Prominent figures from the party and the state, science, culture and education, economic managers and outstanding production workers met with students and instructors. This confirms once again that in our country education is a concern of all the people.

Higher education has always marched in the front ranks of scientific and technical progress. It also possesses significant achievements in the training of highly skilled specialists and in the development of the basic and applied branches of science. It has accumulated tremendous scientific potential. At the same time, the present stage in the development of Soviet society and acceleration of the pace of socioeconomic and scientific and technical progress are today posing a number of new tasks, resolution of which requires fundamental restructuring of the function of higher education. The purpose of such restructuring is to introduce a structure, forms and methods of training specialists in accordance with the dynamics of society's development, strengthen the ties between higher education and real life and increase education's contribution in the solution of current tasks in the development of the economy.

Restructuring of higher education means greater orientation of specialists' training toward the future, and an accent on teaching students habits of creative thinking, the ability to see and formulate new problems and seek nontraditional solutions to them. The world view-related and methodological aspects of specialist training are taking on ever more central importance.

All the most important trends in scientific and technical progress -- robotization of production, creation of automated design systems and flexible automated production processes etc. -- are connected with the broadest possible utilization of computers. This defines the most serious task of our VUZ's: to achieve universal computer literacy.

When speaking of the model specialist of the not-too-distant future, one should note one other important characteristic that he will possess: this model will not be obtained by simple projection from the past through the present and into the future. Under conditions of high rates of scientific and technical and socioeconomic development, projection is complicated by the fact that the future will be shaped in significant measure under the influence of tendencies which are arising only today. Sometimes their effect has not as yet become clearly evident, but they can become directing and definitive within a very short period of time. In this connection yet another exceptionally important quality of the specialist of the future is a feel for innovation and the ability to realign one's style of thinking.

The most characteristic trait of contemporary education is that it is being transformed increasingly into a continuous form. This continuity acts as a precondition not only for successful vocational activity, but also for realization of the human essence, of comprehensive and harmonious personality

development. Within the context of continuous education the necessity of a transition to consideration of all types of educational institutions within the framework of a unified system of education is obvious. In this way the proper conditions for the reproduction and development of culture in the broadest sense of the word are created: both at the level of society and the level of individuals.

We have only mentioned part of the trends which all to a greater or lesser degree determine ways of restructuring the functioning of higher education. When pondering these ways, it is important to take into consideration one thing: higher education possesses considerable experience with the search for new solutions. It is essential that this search should not cease for a single day. In the final analysis the success of the work of higher education has always been determined by and continues to be determined by the measure of creativity, initiative and selflessness of the instructors who direct the academic process. For it is the human factor -- the individual fervor and quest -- which is the guarantee of success in the training of a truly modern specialist.

...Over one million young men and women are entering studies at VUZ's for the first time. And each of them made his or her choice, sometimes the first choice of their lives, and consciously determined his or her future. They approached this choice in different ways; for some it was a more conscious decision, for other, less so. Some have prepared for many years to enter one particular VUZ in one particular field, others make their choice at the very last moment. but the initial decision has been made; it is up to us to do everything in our power to see that it grows into certainty and that each student is convinced of the rightness of his or her choice. In other words, we are obligated to make use of all opportunities for consistent development of students' interest in their future professions.

The significance of this work can scarcely be exaggerated; the effectiveness of and yield from academic labor in VUZ's is in large part determined by the degree of a student's vocational enthusiasm. The content and purpose of this enthusiasm must be developed consistently over the course of the entire period of study, inculcating in a future specialist a personally significant system of social and professional values. And, perhaps, it is the creation of such a system of values and its corresponding system of inquiries and needs, including those which guarantee the lifting up and development of the personality, which comprises above all the essence of the process of the training of a specialist by higher education.

In this connection one should devote attention to acquainting the new VUZ contingent with forms and methods of work in higher education which are new to them, as well as to drawing them into the sociopolitical life of educational institutions. This is the task of the faculty and the Komsomol and trade union organizations of each VUZ.

We all know that the guarantee of successful study at a VUZ is steadily paced work over the course of the entire period of study. And from this point of view tasks relative to the organization of students' independent work are of primary importance. Whereas during the first stages of acquainting students



with the requirements of a VUZ the creation of a system of guiding and organizing influences is important, thereafter the entire logic of the development of these influences must lead to the formation in students of the skills and abilities required to work independently with information sources. In the course of the search for reserves for individualization of study, it is essential that the utilization of modern technical means (particularly computers) and methods of increasing cognitive activity be expanded.

In general one can and should rely to a greater degree upon the students themselves in the area of improving the entire educational system. Their participation therein is not only a precondition for raising the level of the academic process, but also a means of molding the personality of future specialists, making them realize more profoundly the essence of problems solved in the course of their studies and developing their abilities. Consistent expansion of the range of problems which students are required to solve under the guidance of instructors is one of the reliable ways of creating an atmosphere of selfless, creative labor at a VUZ.

Many examples testify to students' great creative potential. The most obvious of these is participation by hundreds of thousands of students in summertime working semesters. The sum of their efforts in this year alone amounted to over 1.5 billion rubles. An even greater result is the tremendous educational effect which is born of young people's personal participation in the fulfillment of the creative plans of the party and the people and in mass political work.

Our students dedicated their achievements to the upcoming party congress, the 40th anniversary of the Victory of the Soviet people in the Great Patriotic War, and the International Youth Year. The 12th World Festival of Young People and Students in Moscow was fittingly crowned with these achievements; the festival was a brilliant demonstration of the anti-imperialist solidarity of our planet's young people and their dedication to the cause of peace and progress. Soviet students did not simply represent our country at the festival, did not simply act as the hospitable hosts and organizers of festival events; they once again showed themselves to be the most advanced and monolithic force within the international youth movement.

Now it is essential that we reinforce and multiply the significant results of our students' summer in the main labor of future specialists: academic labor. Only by following unswervingly the Leninist commandment to study communism should our young people rise to those heights of cognition and transformation of the world which they must achieve in order to be able to participate energetically in the solution of the great and largely new tasks which are presented by the coming stage of socialist construction.

A common task which today faces and is being solved by the collective of instructors in higher education is that of creating both the proper conditions for academic labor and an atmosphere which aids in discovering and developing the gifts and abilities of each student. Success in the resolution of this task will in large part be determined by the views, convictions and enthusiasm of the instructors themselves, and the image of each one of them. A common level of culture, profound knowledge of one's subject and a creative attitude

toward it, individuality, adherence to principles, humaneness, and the ability to understand one's students, help them resolve in time not only academic but also purely personal problems, and be an example and model for them in all things: such are the high standards which an instructor in higher education must meet.

Timely tasks of the present day, such as the transformations which must be made in higher education by the end of this century, raise the mission of VUZ instructor to a new level. Educator and scientist, teacher and methodologist, he or she must possess not only great personal creative potential, but also without fail the ability to attract and lead, to give to young people an interest in learning along with scientific knowledge. As a matter of fact, it is precisely instructors' ideological and theoretical level which largely predetermines the limits which are realistically attainable in the realm of higher education. Here it is appropriate to recall a well-known saying by Vladimir Ilyich Lenin: "...Any sort of 'control,' 'leadership,' 'programs,' 'regulations' and so forth are all empty sounds in comparison to lecturers' qualitative makeup."

In higher education a great deal has been done to fulfill Leninist precepts and to mold a highly skilled and creative scientific pedagogical collective. Today approximately one-half of all our country's doctors of science and candidates of science works in higher education; one instructor in two now has a scientific degree or title. Regular updating of the knowledge of VUZ educators is provided by 127 departments and nine institutes of advanced training, and approximately 60,000 persons are now doing graduate work at VUZ's. However, it is no secret that behind these favorable general indices are hidden unequal distribution of accredited personnel between VUZ's and other branches of knowledge, a high turnover rate on the teaching staffs of educational institutions in a number of regions, a not always satisfactory age structure in scientific pedagogical collectives, and a lack of experience with practical production work on the part of some instructors in specialized disciplines.

In his work an instructor acts not only and not so much as a person who possesses a given sum of professional knowledge and skills, but rather as an individual who has both a professional and a moral right to be an educator of the new generation of specialists. This right is reinforced not only by a high level of professionalism, but also by exceptionally great demands upon oneself. The personality development of a true educator never ends, because his labor does not permit routine and **repetition**. Each new year and each new group of students are a new pedagogical task which an instructor is called upon to resolve by analyzing the academic work of his students and the results thereof, selecting the proper methods and forms of educational work for a specific audience, and evaluating critically his own work.

But in order to conduct the search for knowledge skillfully and successfully, one must profoundly understand the conformance to law which are the basis of all educational work, i.e. be extremely well-versed in the psychopedagogical conformance to law in the processes of teaching and upbringing. Therefore all instructors in higher education must, in addition to **mastering** their basic specialty, constantly and persistently seek mastery of their vocation: education. Knowledge of and utilization of data from the fields of pedagogics and psychology are the most important means of increasing the effectiveness and quality of

specialist training in higher education.

The development of such an important trend in the work of VUZ's as curatorship [kuratorstvo] deserves careful attention. In essence, a curator should be a person to whom a student can always come for advice, a person with whom he can share confidential matters and receive advice, an answer and often help as well. In this area those students who only recently have set out on the road of independent life, perhaps for the first time, deserve special attention, students who perhaps are not yet fully prepared for their new life.

Further orientation toward practical activity, strict order and discipline, and intensification of the academic process and scientific research serve as a significant aspect of the organizational and ideological work of scientific pedagogical collectives. In this connection the problem of rationalizing and increasing the efficiency of instructors' and scientists' labor requires an immediate solution. VUZ's do have possibilities for solving this problem. These are to be found, firstly, in decisive elimination of all manifestations of disorganization in work and of all unjustified diversions of scientists and instructors from their primary duties; and, secondly, in significant improvement of equipment for the work of scientific pedagogical workers and in reinforcement of VUZ auxiliary services which deal with technical study aids and academic and scientific equipment. Solution of these two interrelated tasks will allow instructors to save a significant amount of time and will help free them for creative activities and for individual lessons with future specialists.

The further development of scientific research at VUZ's is seen as a powerful accelerator of instructors' creative growth and increase in the quality of specialists' training, and at the same time it is an influential factor relative to the growth of higher education's contribution to progress in the national economy.

The very atmosphere and very system of relationships existing at a VUZ should inspire in students a feeling of being part of truly higher education, education which ensures the proper conditions not only for acquiring solid and in-depth specialized knowledge, but also for becoming acquainted with the true culture of human interaction. A special role in this is played by an atmosphere of searching and innovation, which atmosphere is largely responsible for creating a participatory attitude among future specialists.

The qualitative advances which it is essential to achieve in all sectors of the development of higher education make the task of reinforcing academic institutions' material base particularly urgent. On the eve of the new five-year plan it is essential that we establish in each VUZ specific plans for the construction and restoration of academic and residence halls and for technical reequipping of academic and scientific work. In doing so economical, zealous utilization of all existing opportunities, concentration of financial and material resources, and acquisition of funds for the purpose of updating higher education's material base from those sectors for which specialists are being trained should all be given special emphasis.

Nevertheless, no matter how important physical resources may be, the human factor remains paramount. It was not by coincidence that, at a CPSU Central

Committee session on matters of speeding up scientific and technical progress, M. S. Gorbachev emphasized: "All the experience of our party tells us: little can be done to change the economy, administration and education unless a psychological restructuring is realized and the desire and ability to think and work in a new way created."

Knowledge is a powerful tool for the scientific and technical and social progress of society. And VUZ collectives are urged to do everything in their power to ensure that this tool is passed on to strong and reliable hands.

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## EDUCATION

### BASIC OBJECTIVES OF SECONDARY SCHOOL CURRICULUM OUTLINED

Moscow POLITICHESKOYE SAMOOBRAZOVANIYE in Russian No 10, Oct 85 pp 53-59

[Article by N. Nikrandrov and N. Sitnikova: "Improving the Content of Secondary Education"; "consultation on the second subject in the schools of scientific communism for teachers and other personnel of popular education. For the training plan and consultation on the study of the first subject, see edition No 9 of the journal for 1985."]

[Excerpts] The program for the acceleration of scientific-technical and social progress of Soviet society which was put forth at the April (1985) plenum of the party Central Committee as well as measures outlined in this connection at a conference in the CPSU Central Committee (11-12 June 1985) have tremendous significance for the functioning of the entire system for the training and raising the qualifications of personnel in our country, a system, the basis of which consists of a general secondary education.

The goal of the lesson is the study of the basic requirements for the content of a general secondary education under conditions of the acceleration of scientific and technical progress and accomplishment of reforms of the general educational and vocational school.

We recommend the following model plan for the study of the subject:

1. Contemporary requirements for the training of the secondary school graduate.
2. Intensifying the polytechnical direction of the general secondary education.
3. General computer literacy of the youth--the call of scientific and technical progress.

In the course of preparations for the lesson, the propagandist can use the following literature: Marx, K. "Instructions to the Delegates of the Temporary Central Soviet on Individual Questions. Marx, K. and Engels, F., "Sochineniye" [Works], Vol 16, pp 195-199; Lenin, V. I., "On a Polytechnical Education," "Polnoye Sobraniye Sochineniy" [Complete Works], Vol 42, pp 228-230; Gorbachev, M. S., "On Convening the Next, 27th CPSU Congress and Tasks Connected with its Preparation and Conduct," "Materialy Plenuma Tsentralnogo Komiteta KPSS 23 Aprelya 1985" [Materials of the Plenum of the CPSU Central Committee of 23 April 1985, Moscow, Politizdat, 1985; Gorbachev, M. C., "Korennoy vopros

ekonomicheskoy politiki partii" [The Basic Question of the Party's Economic Policy]. Report at the Conference in the CPSU Central Committee on Questions of Accelerating Scientific and Technical Progress on 11 June 1985. Moscow, Politizdat, 1985. "O reforme obshcheobrazovatelnoy i professionalnoy shkoly" [On the Reform of the General Educational and Vocational School]. Collection of documents and materials. Moscow, Politizdat, 1984; "On Party Leadership of Work on Implementing the Reform of the General Educational and Vocational School in Gorkiy Oblast." Decree of the CPSU Central Committee. PRAVDA, 10 August 1985.

Just what requirements are imposed for the training of the secondary school graduate?

First of all, he should know the principles of Marxism-Leninism and should be convinced of the historical rightness of communism's cause and of the advantages of socialism over capitalism. This is explained not only by the requirements of internal development, but also by the fact that "under the conditions of the sharp aggravation of the international situation it is necessary to increase vigilance toward the intrigues of imperialism's aggressive forces which are conducting shameless attacks against socialism and are counting on the political lack of expertise of young people ("O reforme obshcheobrazovatelnoy i professionalnoy shkoly" [On the Reform of the General Educational and Vocational School] p 40). It is useful to remind the students that the high level of contemporary youth's information and the ability of many young boys and girls to set forth clearly various information from the courses in history and social sciences may coexist with political naivety and, sometimes with indifference to politics and with violations of the standards of morals and public order.

The graduate of the school should possess a sufficiently high level of intellectual development. Now more than ever before it is clear that it is impossible to give all the knowledge which may be required during the entire life or at a specific work site. The impossibility of an unlimited quantitative accumulation of knowledge should be compensated by a high level of general intellectual development which comprises the basis of future self-education and the ability to become oriented independently in the sea of scientific information and, if necessary, master a new profession. In other words, under conditions of the rapid change in the nature of labor and its progressing intellectualization the only one who will be in step with the times will be the one who, in addition to firm knowledge of the basic sciences, possesses flexible thinking, good self-education skills, and a broad general level of being informed.

In the immediate future all graduates of the secondary school will have not only a general secondary education, but also a vocational education.\* This is no less an important social achievement than the accomplishment of the task of a general secondary education in the recent past. Of course, now a person simply cannot --in any case, should not--be satisfied with individual professional skills in a narrowly specialized field. The necessity for a change in labor which was

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\* The requirements for scientific and technical progress which are imposed on the professional education and professional orientation of the youth will be examined in greater detail in the consultation for the third lesson in schools of scientific communism for teachers and other personnel of popular education.

substantiated at one time by K. Marx and has been verified by life and the functional mobility of the contemporary employee (precisely the employee, and not only the worker) is sufficiently practicable for each prospect of change in profession (or mastery of an allied profession) and work site--all this requires broad knowledge of contemporary management, of production, and of the world of professions. Of course, such knowledge has meaning when it is combined with a high degree of readiness for labor and the ability to work and with a creative attitude toward the matter. One can find everywhere examples of such an attitude and everywhere there are leaders and innovators of production for whom, with all the importance of the factor of personal material interest, the main thing is creative labor filled with high content. And it is expedient to cite such examples, including pedagogical labor. At the same time, the students should be reminded that now there is still much manual, unmechanized, and slightly mechanized labor for which, since it is needed, they must also be psychologically ready. A decrease in the share of such labor is one of the directions and an important condition for scientific and technical progress.

In the course of the school's reform the physical development of the children and teenagers, youths, and girls should be improved. Clearly, physical health is priceless personal property but, at the same time, it is also public wealth. A physically and mentally healthy, hardy, and trained person will do more at work and will be able to spend his spare time more completely and richly. At the same time, any teacher knows that some pupils acquire incorrect hygienic habits, do not observe the regimen, and become accustomed to smoking and, it happens, even to alcohol. Skillfully selected favorable and unfavorable facts of this type, especially using materials of the rayon and school, will help the propagandist to disclose more completely this important task of educational and indoctrinational work.

The world-outlook direction of all training material will be intensified in the reform process. For example, within the framework of the socio-political and humanitarian cycle it is necessary to show more broadly and more vividly the great achievements and creative tasks of the Soviet people as well as of the peoples of the socialist countries in the building of a new society, the complexity of the contemporary international situation, and the acuteness of the ideological struggle in the world.

The teacher of physics, chemistry or biology always finds examples of discoveries, inventions, and technical devices which increase the authority of man over nature.

Regardless of how many correct and needed facts we give in school now, under conditions of the rapid development of science and a reduction in the times of "survivability" of specific knowledge, the tasks of school instruction will not be accomplished, as has already been mentioned, without instilling the skills of self-education in the pupils. It is important to disclose before the students its significance under conditions of the acceleration of scientific and technical progress and to show the possibility of the sequential, stage-by-stage teaching of self-education.

A special and very important aspect of the influence of scientific and technical progress on the content of a secondary education is the strengthening of instruction's polytechnical direction. This is the second question of the subject.

In beginning its presentation, the propagandist reminds the students that the contemporary Soviet conception of the system of polytechnical education is the furthest development of the basic ideas of K. Marx, F. Engels, and V. I. Lenin. Thus, Marx wrote about the significance of the productive labor of children and teenagers in indispensable connection with education, in so doing distinguishing such aspects of education as mental education, physical education, and technical instruction, and he stressed the significance of a "gradually more complicated course of mental and physical education and technical instruction" (K. Marx and F. Engels, "Sochineniye," Vol 16, p 198). In developing this thesis, V. I. Lenin stressed the necessity that each one "has a polytechnical world outlook and the bases (rudiments) of a polytechnical education" ("Polnoye Sobraniye Sochineniy," Vol 42, p 230).

In the Basic Directions of the Reform of the General Educational and Vocational School the intensification of the polytechnical direction in the content of education is placed in a direct connection with an increase in the quality of the teaching-indoctrinational process and a radical improvement in labor indoctrination, instruction, and professional orientation. Actually, scientific and technical progress makes polytechnical instruction a more urgent and, at the same time, more difficult task. Its accomplishment seemingly is facilitated by the natural attraction of contemporary youth to equipment and the ever greater saturation of the spheres of labor and living with equipment. But, of course, there can be no counting on random even if frequent "meetings" between the youth and equipment since in this case the systematic nature in the pupils' mastery of polytechnical knowledge, abilities and skills, and their connection with a general education would be destroyed. Therefore, we are speaking precisely of the polytechnical content of all training disciplines with consideration of the specific nature of each of them, that is, of the realization of the system of polytechnical education as a principle of instruction in school.

The political direction of instruction under contemporary conditions signifies first of all the molding, in the pupils, of a system of knowledge of the essence, content, and social consequences of scientific and technical progress. Its contemporary stage is characterized by the drawing together of science and production; by a rapid change in all elements of the productive forces (employee, tools of labor, objects of labor); by intensification of the production process on the basis of labor-saving, resource-saving, and wastefree technologies; by the introduction of progressive forms for the organization of labor; by the creation of new energy sources; by the production and employment of materials which did not previously exist in nature; and by intensification of the influence of scientific-technical and production activity of man on our entire planet and in near-Earth space and the global and economic problems which arise in this connection. Scientific-technical progress is also characterized by the fact that under conditions of socialism it is inseparably connected with social progress. The development of science and technology urgently requires, for example, a rise in the employee's education level and his overall style without which the control of complex equipment is impossible.

Great significance is acquired by education in the protection of nature and ecological education, the main task of which is the establishment, in the end, of balanced and harmonious relationships in the "man-nature" system. The leader of the lessons should remind the students that F. Engels stressed the relativity



of all of man's "victories" over nature. "...At each step," he wrote, "facts remind us that we in no way rule nature as a conqueror rules a foreign people and do not rule it as someone located outside of nature,--that on the contrary we belong to it with our flesh, blood, and brain and are located within it, and that all our domination of it consists of the fact that we, in contrast with all other beings, are able to know its laws and employ them correctly (K. Marx and F. Engels, "Sochineniye," Vol 20, p 496. And further: "...millenia were required for us to learn to a certain extent to consider previously more remote natural consequences of our actions which are directed toward production...." (Ibid.). Here it is appropriate to show that now the situation has become especially aggravated because of capitalism's predatory exploitation of natural resources and contamination of the atmosphere. It is for this very reason that ecological problems step forth as an important part of polytechnical education.

The duty of scientific and technical progress is ensuring the general computer literacy of the youth: This is the third question of the lesson. The propagandist reminds the students that in January 1985 the Politburo of the CPSU Central Committee examined the state program for the creation and development of production and the efficient use of computer equipment and automated systems for the period to the year 2,000. The Basic Directions of the Reform of the General Educational and Vocational School recognized the necessity to "equip the pupils with knowledge and skills for the use of contemporary computer equipment, ensure the broad employment of computers in the training process, and create special school and inter-school offices for this." This problem acquires special acuteness in connection with the fact that the course, "Bases of Informatics and Computer Equipment," is already being introduced for senior students this training year.

In speaking of the necessity and wide capabilities of computers, it is expedient for the propagandist to cite several convincing facts which show the significance of the computerization of contemporary society. Here are some examples which, of course, the propagandist can supplement.

Thanks to the use of microprocessor equipment the cost of operations conducted by computers (per one conventional unit) was reduced 100,000-fold during the last 25 years.

Today's computers have "migrated" from the computer rooms to desks. In comparison with the first-generation computers their size has decreased roughly 300,000-fold. It is characteristic here that basic research in the field of solid-state physics permits doubling the capacity of computers every two years. This example, by the way, is also important in another respect: it shows how much basic science which is directed, it would seem, toward the knowledge of abstract things gives to practice.

Such qualities of microprocessor equipment as operating speed with low energy consumption, comparatively low and constantly decreasing cost, and simplicity of technical maintenance determine the broad sphere for its employment: it is industrial robots, flexible production systems, automated plants, systems for the automated design, construction, and technological preparation of production (SAPR), and much more. Computers permit reducing times for designing two to three fold, preparing drawing documentation 50-80 times more rapidly in comparison with traditional methods, and reorganizing for the output of new articles more rapidly.

Automatic systems for the control of technological processes decrease expenditures of raw materials and energy and permit making control decisions more rapidly. The employment of computers in the savings bank and social security systems and in accountant calculations decreases the amount of documentation and accordingly reduces the number of administrative personnel and accelerates operations.

For the reequipping of the national economy, science, and spheres of education on the basis of the latest computer equipment the country needs people who master informatics and the equipment itself, which also explains the significance which is now attached to general computer literacy or, as they sometimes say now, "to second literacy." The goal of the training subject, "Principles of Informatics and Computer Equipment," is to mold in the pupils a notion of the most important rules and methods for the solution of problems on computers, acquaint them with the use and role of computers in the contemporary world, and generate a positive attitude toward the computer as man's assistant in many fields of his activity. The new training subject should also have a favorable influence on the trainees' style of thinking: the algorithmic style forms the ability for broad mathematical generalizations and makes the study of mathematics and physics more active. The solution of problems in mathematics, physics, and chemistry with the use of computers will introduce a new emotional aspect into instruction -- a sense of victory over the machine. Skills obtained while still in school and a positive attitude toward the computer will help many youngsters to link their lives with the most advanced direction in scientific and technical progress. At the same time, it is expedient to note that the employment of computers does not replace man, the requirement for whose creative labor is increasing.

It is clear that firm knowledge of mathematics and physics is important for the successful mastery of the new training subject. But its opposite favorable influence on these most important and traditional components of the school program should not be underestimated, either. The study of the principles of informatics and computer equipment, algorithms, and algorithmization will raise the requirements for strictness of mathematical reasoning and accuracy of substantiations, simultaneously showing that these requirements are not the whimsy of teachers. The physics course will help schoolchildren to get to know the element base of microprocessor equipment more deeply and to understand the operating principle of the computer. On the other hand, this equipment itself is seemingly the living embodiment of science, in particular, of physics, and under contemporary conditions when physics is losing its obviousness in considerable measure the use of computers will further an understanding of the significance of its study.

The leader of the lessons should stress especially that we have 25 years of experience in teaching the principles of programming and computer equipment in the secondary school. The beginning took place in Moscow in the 1959/60 training year, and by the middle of the 1960's this course was already studied in more than 400 of the country's schools. Now, clearly, the scales will be absolutely different and the requirements for the technical and pedagogical support of this process are also increasing. Since it does not appear possible to equip all schools with computer equipment at once, the problem will be solved gradually: in some schools there will be special offices, some of the youngsters will be taught in inter-school offices, and it is necessary to use microcalculators.

A special council on computerization, which is headed by the first secretary of the rayon committee of the CPSU, has been created in Moscow's Oktyabrskiy rayon. Schools, vocational and technical schools [PTU] and tekhnikums are in the council's field of view. In the rayon Pioneer House and House of Komsomols and Schoolchildren parents master microprocessor equipment together with the children.

The practice of this rayon shows that among the leaders of training-indoctrination institutions two equally unacceptable points of view on the process of computerization of a secondary education exist. The first consists of attempts to install in schools and PTU's as much electronic computer equipment as possible without consideration of the requirement for it and without the appropriate methodological and organizational preparation. The second is reduced to the rejection of this equipment at any price in order to cover their timidity and, at times, their inability to use it in the training process.

Proceeding from this, the party raykom is devoting great attention to the necessary training of personnel. Up to the present moment the leaders of the rayon's secondary educational institutions, their deputies, and all employees of the rayon department of popular education have completed courses on the employment of computers in school. During this training year all teachers of the rayon will receive the corresponding knowledge. To render methodological and technical assistance to teachers who are teaching the course, "Principles of Informatics and Computer Equipment," and to overcome the psychological uncertainty which is still encountered among them, a specialist on the use of computers has been assigned to each one as a consultant on a voluntary service basis.

But all the same, the main role in ensuring general computer literacy just as, by the way, in everything which regards the implementation of school reform, belongs to the teacher. For it is precisely his conviction in the necessity of this matter for the present and, to an even greater degree, for the future of the country which will permit overcoming many difficulties which are inevitable in connection with deviation from accustomed notions and beaten paths.

Until individual microcomputers have reached the schools and the PTU's in mass quantities, a solution of the problem may be assigning ninth grade classes to organizations in which such computers are found. Clearly, this is troublesome, and it is clear some fears also exist that perhaps the "youngsters will spoil something." But you see, school reform is actually a common cause of the nation, and here we are speaking about a very important aspect of reform; therefore, it is useful to use the collaboration of the basic enterprises and institutions of Moscow, Novosibirsk, and Yaroslavl in the computerization of instruction in other cities and regions, too. Thus, in Yaroslavl School No 3 a bureau of young programmers has been created, university students acquaint the youngsters with the work of the mini-computer, and an office of microprocessor equipment is being created in the school. Instruction in direct dialog with a computer is taking place on the basis of the computer center in Akademgorodok in school No 130 of Novosibirsk. Here, the school has only a display classroom while the computer itself is located with the sponsors and is connected with the school through a collective-use network. The school's teachers can order one or another computer which is necessary for a lesson, communication with which is established by telephone. An advantage of such an operating system is that the schoolchildren quickly become acquainted with the latest teaching programs. It is of no small importance that a large volume of external memory is used in the course of instruction.

This summer about 70,000 teachers from schools, technical schools, and SPTU's (rural vocational and technical school) underwent course training which will help them better to teach schoolchildren the principles of informatics and computer equipment. True, and this should be told to the students, not all schools and vocational and technical schools are beginning the 1985/86 training year with computer equipment. But the educational institutions will gradually be equipped with the "Shkolnitsa" [Schoolgirl] system with the "Agat" personal computer which has been recommended as the standard system for school informatics offices. The experience of work with this system exists, for example, in the Novosibirsk schools where already from the 4th and 5th grades the youngsters are learning to program in the "Robik" and "Rapid" languages. Some pupils themselves have become authors of packs of applied programs for practical and laboratory work and for simulating physical, chemical, and biological experiments on computers.

It is recommended that the following questions be brought up for discussion on the seminar lesson:

1. Increasing demandingness toward the level of training of a secondary school graduate under NTP [scientific and technical propaganda] conditions.
2. NTP and the improvement of pedagogical work.

As is known, the success of the lesson depends on how much the propagandist will be able to make the work of each student more active. Therefore, it is expedient to charge one or two of the best trained of them with the presentation of short reports which disclose some specific problems. In such a presentation, for example, the student may tell about the basic, main changes in the content of the subject which he is teaching and about the problems facing it. Practice shows that to a great extent similar problems face teachers of various disciplines; therefore their discussion will also be useful from the viewpoint of the teachers' professional growth.

It is expedient that the students be offered subjects for reports and papers such as:

1. The requirements of NTP for the general educational preparation of the youth.
2. The scientific organization of pedagogical labor and methods to increase its effectiveness.

Before the workers and the parents' community the students may disclose the following problems:

1. The contemporary content of a secondary education and the development of the pupils' creative abilities.
2. General computer literacy--the requirement of the times.

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## EDUCATION

### PLAN FOR COMPUTER USE IN NOVOSIBIRSK SCHOOL CURRICULUM

Moscow TRUD in Russian 1 Sep 85 p 2

[Article by G. Vasileva, Novosibirsk: "The Computer Enters the Classroom"]

[Text] In all of the country's secondary institutions of secondary learning - schools, technical colleges, and secondary technical schools - a new discipline is being introduced: "The Basics of Information Science and Computer Technology."

Is every child capable of learning the language of a machine? Let us recall our own childhood. An imagined telephone, make-believe horses, a train, any attempts at all to communicate with specific images - everything was immediately recognized by our playmates as reality after only a single trait or reference. And let us not forget how children and teenagers like to create their own "language": changing words around, breaking up syllables, or reading backwards. For this reason, "microprocessor," "subassembly," "printer," and other terms are mastered by children just as easily as "spoon," "brush," and "pencil."

In several of Novosibirsk's schools, school classrooms compose music and verse, draw, show the complexity in the actions of physical laws, and even tell the director how many people were late on a given day. Mathematicians and computer center programmers did not teach them all of this, but the most average school children in computer classes were responsible.

When a tenth-grader of School No 166, Nadya Poznanskaya, offered to acquaint me with a program developed by her called "Electromagnetic Fluctuations," I have to admit that I approached the computer's actuating keyboard with considerable timidity. On a control panel similar to a typewriter's keyboard, I press the program key and look at a normal television screen. The machine introduces itself and tells me that its name is "Agat" and that we will be working with the "Shkolnitsa" system in the Rapir language.

I press the key for running Nadya's program. Emerald lines flash across the screen: "Hello, do you want to work with Lenets' or Faraday's law?" I find the "L" key and choose Lenets. The screen goes out and again flashes. Instructions appear, including reference designations and a vocabulary for the communications between "Man and Machine." Having mastered the rules for dialogue, I start working on my own in about three minutes: graphics and

colored multiplication columns appear on the screen. I see Lenets' law in operation, thanks to Nadya, before my eyes. My fear disappeared. The main thing, however, is not that I learned by heart a chapter from a textbook, but that I could present a physical phenomenon visually.

The computer class using the "Agat" personal computer had been planned for in School No 166 two years ago. The basics of computer technology were initially taught by officials of the information science section of the Computer Center of the USSR Academy of Sciences' Siberian Department, L. Gorodnaya, G. Zvenigorodskiy, Yu. Pervin, and N. Yunerman.

The fifth-graders in the computer class sit at 16 "Agat"s. They were putting together a program, "Etitketa," under the direction of Yu. Pervin. The school children encode, so that the machine understands, the title of the subject, class number, last and first names. Then a button is pressed: The typing mechanism, the printer, turns out hundreds of labels for notebooks. The next program is "The Invitation Card"...

With the help of the machine, the fifth-graders create illustrations for any stories, draw geometric figures, and master during the interesting exercise such boring terms as function, graphics, axis, and coordinates.

What do you notice about the fifth-graders who have worked for a year and a half with computers? In the first place, they think more clearly, can argue more logically, without digressing into details. Additionally, you notice a desire to work intensively; this is possible only when one is emotionally interested. It is not easy to get the children to leave this class.

The experiment, conducted in Novosibirsk's School No 166, proved the feasibility of utilizing a school computer center, equipped with a personal computer, both for organizing productive work with school children (here, a number of contractual, non-financed projects have been completed), and for computerizing all the school's activities (programs for teaching other pupils chemistry, history and mathematics have been written with the help of older school children).

In a word, the new subject is causing revolutionary changes in the makeup of schooling. It is necessary, however, to state here that a revolution in education and the organization of the learning process is also necessary. Here is one simple problem. It is still difficult to equip schools with "Agat". It is an expensive machine, it costs almost 3,000 rubles. About 20 units are necessary to equip a computer class at school. This means that we can turn to the experiences of other schools in Novosibirsk which are using the machines of the permanent computer centers of various insititutions and enterprises.

Of course, there are still no computer centers in many populated areas. What can we do in schools, and these are in the majority, where it is not possible to teach computers visually? The only approach we still have is to teach the subject's theory "without a machine."

Academician A. P. Yershov believes that: "The consideration we need to

clarify both for the teacher and the parents is as follows: The subject will reveal such elements of information science which form the basis of universal knowledge. We include here the concept of the algorithm, the development of programmed thinking, the ability to organize operations for the sake of achieving the assigned tasks and express the plan of these operations in an elementary algorithmic language. Mastering such an algorithmic grammar, and everyone is capable of doing so, removes the veil of secrecy and inaccessible complexity from the computer. In this plan, the lack of a computer does not impede either the teacher or the pupil from thoughtfully and completely mastering the theoretical and cognitive portion of the course and completing the practicum of computations with the help of a hand-calculator."

A second problem is that the experiment with "Agat" in the Novosibirsk school system begins in the third grade, but is conducted without the participation of qualified methodologists, hygienists, physicians and psychologists.

Of course, there are still many questions which have to be answered: What are the forms, dosages, and methods for utilizing computers in class and how old should the pupils be? Also, why do people have to be familiar with the computer at all?

In the council for scientific-technological progress of the CPSU's Novosibirsk obkom, a section has been established to study the use of computers in school, and a program of organizational, scientific-technical, and systematic measures has been developed in order to provide answers to these and other questions. This program envisions the training of cadres for instructing, the determination of strong institutes of higher learning, schools, engineering colleges, and training, production combines, the creation of display classes, and the extensive provision of schools with programmable hand-calculators.

The idea of providing general training to students in computerology and programming is not a passing campaign. This idea is stipulated by the requirements of the economy for a system of education. It is for this reason that the initiative of schools and the assistance of sponsors are so acutely necessary.

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## EDUCATION

### EFFORTS TO TRAIN MORE AGRICULTURAL SPECIALISTS IN RSFSR

Moscow VESTNIK STATISTIKI in Russian No 10, Oct 85 pp 28-33

[Article by A. Aksitov, section chief in the Central Statistical Administration of the RSFSR: "The Provision of Agriculture With Specialists"]

[Text] The contemporary stage of development of the agricultural sector of the Russian Federation's economy, which is occurring in a situation of scientific and technological revolution, is characterized by the industrialization of production, specialization and intensification of interbranch exchange.

The March 1965 Plenum of the CPSU Central Committee was highly important for the development of agriculture in the republic. The implementation of its decisions made it possible to substantially strengthen and renew the materials and equipment base of kolkhozes and sovkhozes in the Russian Federation and to accelerate scientific and technological progress in the branch. Requirements with respect to the general education and professional training of agricultural workers on the kolkhozes and sovkhozes have grown in the situation of industrialization.

The statistical study of changes occurring in the structure of agricultural cadres is a matter of practical importance in view of the tasks set for the republic's agriculture by the May 1982 Plenum of the CPSU Central Committee.

The general educational and professional level of agricultural workers in the Russian Federation rose sharply during the years of socialist development. While there were 62 people with a higher or secondary (complete or incomplete) education for every 1,000 members of the rural population employed in agriculture in 1939, for example, the figure had risen to 666 in 1979. There were significant advances in the educational level of kolkhoz workers as well.

The number of specialists with a higher or secondary agricultural education in agriculture in the RSFSR was 1.7-fold greater in 1983 than in 1970. This included a 2.0-fold increase on the kolkhozes and a 1.9-fold increase on sovkhozes and at interfarm enterprises. As of 1 April 1985 there were 706,000 managers and specialists with diplomas on kolkhozes and sovkhozes of the RSFSR. There were 95,000 more managers and specialists holding diplomas on the kolkhozes and sovkhozes than in 1980. There were 300,000 managers and specialists with a higher or secondary specialized education in animal husbandry and feed production as of 1 April 1985, compared with 226,000 in 1975.



The qualitative makeup of kolkhoz and sovkhos cadres improved. The specific portion of veterinary workers with a higher or secondary specialized education increased from 73 percent to 85 percent between 1 April 1975 and 1 April 1985, the number of engineers-and-mechanics increased from 59 to 75 percent, economists--from 89 to 95 percent, bookkeepers--from 42 to 69 percent, and livestock specialists--from 94 to 96 percent. The number of graduate leaders of production brigades in cropping operations grew 1.6-fold during that period, and the number of managers and brigade leaders on the livestock farms increased 1.9-fold.

There were 51 specialists with a higher or secondary specialized education per 1,000 agricultural workers in the republic in 1984, compared with 23 in 1970 and 34 in 1975. There were 40 graduate specialists per 1,000 workers in agriculture in oblasts and autonomous republics of the Nonchernozem.

Despite the increase in the group of graduate specialists in agriculture in the RSFSR, however, the need for them by the kolkhozes and sovkhoses is not being fully met.

As of 1 April 1985 there were around 273,000 practical workers without a specialized education serving as managers and specialists on the kolkhozes and sovkhoses and at interfarm agricultural enterprises in the republic, and 92,000 in oblasts and autonomous republics of the Nonchernozem Zone.

Table 1. Makeup of Managers and Specialists (including those in bookkeeping) On Kolkhozes and Sovkhoses in the Russian Federation (as a percentage of the total number)

	(1) РСФСР		(2) Нечерноземная зона	
	1982 г.	1985 г.	1982 г.	1985 г.
(3) Всего руководящих работников и специалистов . . . . .	100	100	100	100
(4) из них:				
(5) с высшим образованием . . . . .	22	25	20	24
(6) со средним специальным . . . . .	46	48	47	49
(7) без специального образования . . . . .	32	27	33	27

Key:

- |   |   |
|---|---|
| 1. RSFSR                                  | 4. Including                              |
| 2. Nonchernozem Zone                      | 5. With a higher education                |
| 3. All management workers and specialists | 6. With a secondary specialized education |
|   | 7. Without a specialized education        |

Despite the rise in the educational level of farm managers and chief specialists on the kolkhozes and sovkhoses for the republic as a whole, the situation is still unsatisfactory in certain oblasts and autonomous republics of the Nonchernozem Zone.

The problem of providing the kolkhozes and sovkhoses with mid-level management cadres is acute. The field brigades and animal husbandry complexes today are large subdivisions with a great capability with respect to area of cultivated land, level of provision with equipment, numbers of livestock and all other indices. This has significantly altered the role and functions of mid-level managers. They must make production decisions requiring a knowledge of modern agricultural equipment, the fundamentals of agronomy, animal husbandry, veterinary science, the economics and organization of production, and so forth.

The level at which the sections are provided with specialist cadres does not meet today's requirements, however. As of 1 April 1985 49 percent of the mid-level managers on kolkhozes and sovkhoses of the RSFSR lacked a specialized education. Only 42 percent of the leaders of production brigades in cropping operations and 43 percent of the managers of livestock complexes on the kolkhozes had a higher or secondary specialized education, and the corresponding figure was 51 percent for the sovkhoses. Republic agriculture has an acute need for veterinarians, feed production specialists, engineers-and-mechanics, bookkeepers and certain other specialists. In addition, there are many practical workers serving as specialists in the engineering and technical, veterinary and economic services on kolkhozes and sovkhoses of the Nonchernozem Zone.

In this situation it is important to retain specialists in agriculture. At the present time a considerable portion of the young specialists assigned to farms from the agricultural VUZs leave their jobs without having worked a year.

The following steps are being taken in order to retain cadres in agriculture and give them greater material incentive: salaries are being raised for managerial workers and specialists on the sovkhoses and at other state agricultural enterprises; special benefits are being provided for young agricultural specialists arriving by assignment after completing higher or secondary specialized educational institutions; incentives are provided for managers and specialists who transfer to economically weak farms from outstanding kolkhozes and sovkhoses; and steps are being taken to improve retraining and advanced training for the cadres.

A total of 478,000 people were trained by the Russian Federation's higher and secondary agricultural educational institutions during the first 4 years of the 11th Five-Year Plan, 146,000 of them with a higher education. New agricultural educational institutions have been established in the Nonchernozem Zone of the RSFSR, Siberia and the Far East in order to better provide kolkhozes and sovkhoses in those regions with specialists.

During the 1984/85 academic year specialists were trained for agriculture at 58 agricultural VUZs and 314 secondary agricultural educational institutions, as well as a number of technical and economic VUZs and tekhnikums. In addition, 13 universities provide training in the agricultural specialties. A total of 301,000 people (10 percent of all the students in the RSFSR) studied agricultural specialties at higher educational institutions (including departments), and 407,600 (15.3 percent of all the students) studied at tekhnikums.

Changes in the system of agricultural educational institutions and the number of students (including secondary students) in the RSFSR in recent years are shown in Table 2.

Table 2.

	(1) Высшие учебные заведения		(2) Средние специальные учебные заведения	
	1970 г.	1984 г.	1970 г.	1984 г.
(3) Число сельскохозяйственных учебных заведений . . . . .	53	58	306	314
(4) Численность студентов (учащихся) по сельскохозяйственным специальностям—тыс. человек . . . . .	235,3	300,8	365,2	407,6
(5) в том числе на отделениях:				
(6) дневных—тыс. человек . . . . .	120,5	162,2	206,9	223,8
(7) в процентах к общему числу . . . . .	51	55	57	54,9
(3) заочных—тыс. человек . . . . .	114,8	138,6	158,3	183,8
(7) в процентах к общему числу . . . . .	49	45	43	45,1

Key:

- |  |  |
|--|--|
| 1. Higher educational institutions   | 5. Including students in the divisions |
| 2. Secondary specialized educational institutions  | 6. Daytime (thousands)                 |
| 3. Number of agricultural educational institutions   | 7. As a percentage of the total number |
| 4. Number of students (including secondary students) in the agricultural specialties (thousands) | 8. By correspondents (thousands)       |

The number of students training in the agricultural specialties increased by 65,500 during the period 1970-1984. The increase was mainly in fulltime students: the number of students studying while continuing to work in production increased insignificantly (by 23,800), while the specific portion of these students in the total number was 4 percent less in 1984 than in 1970.

The group of students studying the agricultural specialties at tekhnikums grew of 42,400 during that period, and the number of students studying there while continuing to hold jobs increased by 25,500.

Specialists with higher or secondary qualifications are presently being trained at agricultural educational institutions in the following specialties: agronomy, agrochemistry and soil science, fruit and vegetable production and viticulture, plant protection, silk production, animal husbandry, veterinary science, land management, mechanization and electrification of agriculture, water management and reclamation, timber management, mechanization of water management and reclamation, automation of agricultural production, economics and organization of agriculture, agricultural planning, and accounting in agriculture.

In addition, the agricultural tekhnikums provide training the following specialties: hunting management and fur farming, bee keeping, poultry farming, mechanization and electrification of animal husbandry.

Admissions to republic VUZs in all the agricultural specialties were 4.5 percent greater in 1984 than in 1975, and the increase was 15.5 percent at VUZs in the Nonchernozem Zone and 10.5 percent in the regions of Siberia and the Far East. The most rapid rates of growth during this period were in the specialties of animal husbandry, accounting, mechanization of water management and reclamation work, veterinary science and the electrification of agriculture.

Table 3. Admissions to Agricultural VUZs and Tekhnikums of the RSFSR in the Leading Specialties in the Branch (at the beginning of the academic year, thousands)

	(1) Высшие учебные заведения			(2) Средние специальные учебные заведения			(3)
	1975 г.	1984 г.	1984 г. в процентах к 1975 г.	1975 г.	1984 г.	1984 г. в процентах к 1975 г.	
(4) Всего принято по специальностям сельского хозяйства . . . . .	56,0	58,5	104,5	123,5	119,3	96,6	
(5) из них по массовым специальностям:							
(6) агрономия . . . . .	8,9	11,1	124,7	18,5	18,1	97,8	
(7) зоотехния . . . . .	8,4	11,8	140,5	22,1	21,4	96,8	
(8) ветеринария . . . . .	4,6	6,3	137,0	8,9	8,8	98,9	
(9) механизация сельского хозяйства . . . . .	12,6	15,3	121,4	29,9	30,6	102,3	
(10) электрификация сельского хозяйства . . . . .	2,1	2,8	133,3	5,8	4,9	84,2	
(11) лесное хозяйство . . . . .	2,6	2,9	111,5	5,2	4,8	91,6	
(12) бухгалтерский учет и анализ хозяйственной деятельности в сельском хозяйстве . . . . .	4,7	6,6	140,4	21,1	21,2	100,5	

Key:

- |   |   |
|---|---|
| 1. Higher educational institutions                  | 7. Animal husbandry   |
| 2. Secondary specialized educational institutions   | 8. Veterinary science                                       |
| 3. 1984 as a percentage of the 1975 figure          | 9. Mechanization of agriculture                             |
| 4. Total admissions in the agricultural specialties | 10. Electrification of agriculture                          |
| 5. In the popular specialties                       | 11. Timber management                                       |
| 6. Agronomy   | 12. Accounting and analysis of economic work in agriculture |

Admissions to secondary specialized educational institutions in the agricultural specialties were 3.4 percent less in 1984 than in 1975. They were 15.8 percent lower in the field of electrification of agriculture, 8.4 percent less in timber management, 3.2 percent less in animal husbandry and 2.2 percent less in agronomy, although there is still a shortage for a number of specialties in



individual regions of the Russian Federation (the Nonchernozem Zone, Siberia and the Far East), particularly in areas where mid-level specialists are not trained. This indicates that the directors and collectives of secondary specialized educational institutions and local directing agencies are not giving proper attention to the composition of this group of students, that direct contractual relations have not been established between the educational institutions and the kolkhozes, sovkhozes and local agricultural administrations in matters of personnel training not just within their own oblasts, but also in the region as a whole, and that possibilities for sending members of the student brigades to these institutions for training are not being adequately utilized.

It should be pointed out that admissions to tekhnikums in the agricultural specialties dropped in 1984 in Kostroma, Gorkiy, Magadan, Chelyabinsk, Omsk, Kirovsk, Kurgan and Ivanovo oblasts. Admissions increased considerably in the Kabardino-Balkar ASSR (15.2%), and Tambov and Gorkiy [sic] oblasts (22.3%), Novgorod Oblast (18.6%), Tyumen Oblast (16.6%), Orenburg Oblast (15.8%), Volgograd Oblast (13.9%), Maritime Kray (16.0%), the Kalmyk ASSR (10.4%), and the Tuva ASSR (8.9%).

In order to better fill out the group and further improve the training of specialists with a secondary specialized education and to provide the kolkhozes, sovkhozes, interfarm and other agricultural production enterprises (and organizations) with these specialists, especially those located far from educational institutions, and to reduce the migration of specialists, the USSR Ministry of Higher and Secondary Education has recommended that the personnel administrations and the educational institutions of the ministries carry out the special-purpose training of specialists with a secondary specialized education on a more extensive basis.

The filling out of the student bodies of educational institutions is being improved by increasing admissions for rural youth sent for training by kolkhozes, sovkhozes and other agricultural enterprises.

The number of students sent by sovkhozes, kolkhozes and agricultural enterprises to higher educational institutions of the branch for training in the 1983/84 academic year accounted for 23 percent of the total number of students, compared with 15 percent in the 1975/76 academic year.

Agricultural production in the Nonchernozem Zone of the RSFSR is experiencing a great need for specialists with a higher education, particularly animal husbandry engineers and veterinarians, of which there is an acute shortage. More than 1,500 of these specialists are now needed in Kalinin and Kirovsk oblasts alone.

The VUZs are not taking adequate advantage of opportunities provided each year in decisions of local party and soviet organs for sending the working rural youth and school graduates to VUZs for training.

As a result, the number of those desiring to train in these specialties is not only not increasing, but is actually dropping in a number of cases.

At the Kirovsk Agricultural Institute the number of applications from secondary school graduates to the animal husbandry engineering department dropped from 1.6 to 1.3 per available position in the past 2 years, for example.

The unsatisfactory preparatory work is resulting in a situation in which the VUZ student bodies are ordinarily filled out without going through the competitive process.

Based on the results of entrance exams for the Kalinin Agricultural Institute, 34 individuals passed the exams for 74 positions in the animal husbandry engineering department last year, for example, and additional students had to be obtained by transferring secondary school graduates who had not passed the competitive exams for other departments or other VUZs.

It should be noted that the directors of certain educational institutions have not taken steps to make the work of the preparatory divisions more effective in order to better fill out the group of students at VUZs in the specialties for which there is an acute shortage. Of 100 people admitted to the preparatory division of the Kalinin Agricultural Institute in 1981, for example, only 79 completed it and enrolled in the VUZ, including only eight people in the specialties for which there is an acute shortage.

VUZs and tekhnikums of the RSFSR turned out 13.4 percent more specialists with higher or secondary skills for agriculture in 1984 than in 1975.

The output of specialists for agriculture from the republic's higher educational institutions increased by 27.2 percent overall during the period 1975-1984. The most rapid rates of increase were in the following specialties: veterinary science, electrification of agriculture, animal husbandry and mechanization of agriculture. The output of graduate specialists at VUZs of the Nonchernozem Zone increased more rapidly than the average republic rate between 1975 and 1984. The rate of increase was 33.9 percent. The output at VUZs in the rayons of Siberia and the Far East increased by 16.6 percent, however, which was considerably below the average rate of growth for turning out specialists for agricultural production in the RSFSR.

The graduation of specialists for agriculture from tekhnikums in a number of oblasts in Siberia, the Far East and the Nonchernozem Zone grew more intensively than for the RSFSR as a whole (by 8 percent). The average increase in the output of specialists from tekhnikums in the Nonchernozem Zone was 10.1 percent, for example, while it was 39 percent in the Komi ASSR, 41.4 percent in Ryazan Oblast, and so forth. The graduation of specialists from secondary agricultural educational institutions increased by an average of 6 percent in areas of Siberia and the Far East (which was somewhat below the figure for the RSFSR as a whole), while it increased by 23 percent in Maritime Kray, 29 percent in Magadan Oblast, 19 percent in the Yakut ASSR, 36.3 percent in Krasnoyarsk Kray and 34 percent in Omsk Oblast.

State statistical agencies must expand their economic analysis of the preparation of specialists, the shaping of the student body at educational institutions, the arrival and retention of young specialists and their efficient use in accordance with their specialty and qualifications, as well as of the retraining of

available specialists with a higher and secondary specialized education working in an agricultural area, and provide directing agencies with comprehensive reports on this matter in a timely manner.

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DEMOGRAPHY

DETERMINING MALE MARITAL STATUS IN REAL GENERATIONS

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[Article by A. Volkov and N. Savchenko from the Demography Section of the Scientific Research Institute of the USSR Central Statistical Administration: "The Marriage Rate of Males in Real Generations"]

[Text] Improved planning and management of the national economy place important demands on the demographic forecasts. One of the urgent problems is to broaden the range of forecasted indicators. In particular, we must have a scientifically sound forecast not only of the size and age-sex structure of the population, but also the future number of families and their distribution according to size and types. For this, it is essential to have a clear notion of the patterns of all the demographic processes effecting the formation and development of families, and particularly the marriage rate.

In demographic analysis the process of the marriage rate by tradition has been viewed as closely tied to the birthrate and for this reason, as a rule, has related to the female part of the population. At the same time in the establishing of families an important role is also played by its male portion. Moreover, the intensity of family formation (if one examines only its demographic factors) depends upon the ratio of both the number of persons of each sex as well as upon the age features of the male and female marriage rate.

In recent years works have been published by I. P. Ilina, A. B. Sinelnikov, M. S. Tolts and L. V. Chuyko on various aspects of the marriage rate, but in these basic attention has been given to the female marriage rate. The marriage rate has been studied from the materials of special surveys conducted by the USSR TsSU on the birthrate in worker and employee families, where all the characteristics necessary for this (the age of entering marriage, its order and so forth) were considered only for women, since according to the survey program the appropriate questions were directed only to women. The male marriage rate up to now has been investigated for a hypothetical generation in the Ukraine by L. V. Chuyko in 1896-1897, 1926-1927, 1958-1959



and 1969-1970 and by M. S. Tolts who calculated tables for the bachelor marriage rate in 1926-1927 and general tables for the male marriage rate for 1896-1897 and 1969-1970.(1)

The given article sets out the results of research on the trends in the male marriage rate in the USSR over the last 25-30 years and discloses its particular features in comparison with the female marriage rate. An attempt has been made to trace these trends using the indicators of the marriage rate for **real generations**. As far as we know, this is the first time that such an attempt has been made.

A specific feature in the demographic development of the postwar period was, on the one hand, substantial changes in the age-sex and marital structures of the population and, on the other, changes in the intensity of the demographic processes related to the Great Patriotic War and the postwar rebuilding of the national economy. The demographic consequences of the war told on the reproduction of the population in subsequent years as well. At the same time, the postwar period brought new traits into demographic development as there were further changes in the functions of the family, the composition of families changed and the birthrate continued dropping on a larger portion of the nation's territory in the process of the demographic transition. In the 1960's and 1970's, the marriage rate and the dynamics of the marital structure of the population were undoubtedly influenced by other social factors, for example, the increased mobility of the youth, changes in legislation concerning marriage and the family and in particular those related to the dissolution of marriage. All these particular features in the demographic situation reflected differently in the various generations. For this reason, the ordinary procedures for describing demographic processes using the dynamics of the indicators for calendar years (or for the so-called hypothetical generation) became insufficient.

Under these conditions the most fitting is the cohorts method or the **real generation method**. Employed successfully for more than two decades in studying the birthrate, this method has been used in the given research for analyzing the male marriage rate. A particular feature of it is that the notion of the demographic process over the life of a generation is obtained on the basis of a series of age indicators for the intensity of this process not for the given calendar year for all ages (as was done in the works of L. Chuyko and M. Tolts) but rather for the aggregate of births in a certain year as this generation moved from one age to another.

The initial material for the study was the data assembled annually by state statistics concerning the number of registered marriages of males for the USSR as a whole with a breakdown of them according to the age of entering marriage. For the first 12 years of marriage age (that is, from 18 to 29 years of age)

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(1) L. V. Chuyko, "Braki i razvody" [Marriages and Divorces], Moscow, Statistika, 1975; M. S. Tolts, "A Method for Constructing Tables of the Bachelor Marriage Rate," in the book: "Demograficheskaya situatsiya v SSSR" [The Demographic Situation in the USSR], Moscow, Statistika, 1976.

the marriage registration materials were worked out according to one-year age intervals and this provided an opportunity to determine the number of persons who were married from the specific generations. However, for obtaining data broken down for the generations, the available values had to be recalculated. The procedure of their transformation can conveniently be shown using a demographic grid a fragment of which is shown in Fig. 1. The vertical lines correspond to the boundaries of the calendar years while the horizontal ones show the precise age values. The diagonals divide the generations of newborn during the calendar year the corresponding number of years ago. The figures (hypothetical) designate the number of persons entering marriage on the boundaries of the given year and age. For example, let us assume according to the data of current reporting in 1974, at an age of 20 years (that is, in the interval of exactly 20 to exactly 21 years), 90 males got married. They belong to two generations, with years of birth of 1953 and 1954. Usually it is considered that demographic events which occurred in a given year in an annual age interval are to be distributed equally between the generations. In the given example, of the males who married at the age of 20 during 1974, 45 marriages of males go to each of the 1953 and 1954 generations, and in 1975, 46 marriages for each of the generations of the 1954 and 1955 years of birth. For the subsequent calculations, however, we need the numbers of persons getting married at this age not over the given calendar year but from each generation. If one assumes the hypothesis of an even distribution of marriages in the given year between the generations, then the number of males getting married at the age of 20 from the 1954 generation (in Fig. 1 this is the parallelogram ABCD) will be  $45 + 46 = 91$ .

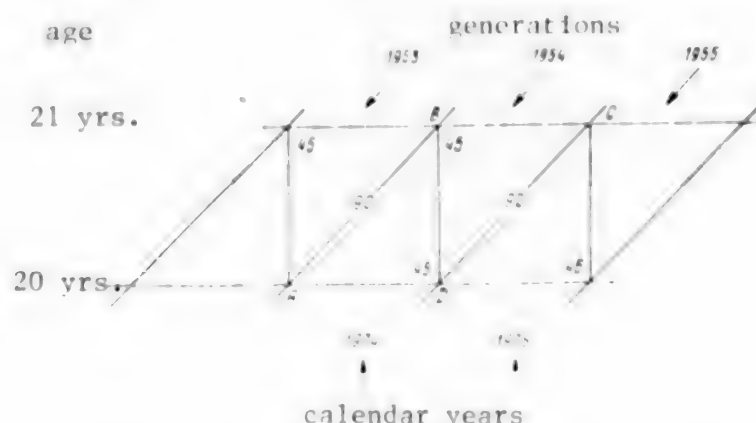


Fig. 1. Number of persons entering marriage according to calendar years and generations (diagram for recalculation)

However, for the generations of the war and first postwar years of birth, due to the sharp fluctuations in the birthrate during those years, such a procedure would be inapplicable, since the number of births over each year changed extremely unevenly and correspondingly the number of persons getting married some 17-18 years later should also change with corresponding unevenness. For this reason, the data for the calendar years must be recalculated by generations proportionately to the sizes of the corresponding generations. That is, the necessary proportions are to be determined from the

ratio of the numbers of persons surviving until the next census from each pair of adjacent generations.

For calculating the indicators of the intensity of the marriage rate by generations, it is also essential to have data on the number of males from each generation reaching the minimum marriage age. As such an age we have accepted 17 years, considering that a portion of the generation gets married before the legally established 18 years. Here for calculating the relative values of the marriage rate it is essential to have data concerning the number of persons at the precise age of 17 years from each generation.(2) Since the population census provides information on the number of persons living at the given moment at an age interval from 17 to 18 years (that is, from precisely 17 to precisely 18 years), such data could be gained only by calculation.

The calculation has been based on the data from the 1959 and 1970 population censuses and the indicators from the mortality tables of 1958-1959 and 1968-1971 which approximate these years. The number of males in the one-year age groups ( $P_x$ ) according to the census data was recalculated into the number of males at the precise age of 17 ( $P_{17}$ ) according to the formula

$$P_{17} = P_x \cdot \frac{l_{17}}{L_x}, \quad (1)$$

where  $l_{17}$  -- the number of persons surviving to the precise age of 17 years,  $L_x$  -- the number of persons living at age  $x$  according to the mortality tables. Since the 1959 and 1970 censuses were conducted at a time close to the start of the year, the amount of  $L_x$  corresponds to the number of persons living from the generation of those born in year  $T = t - x$ , where  $t$  -- the year of the census. Hence, the calculation comes down to incorporating an adjustment for the number of persons who died in each generation between the census and the precise age of 17 years, under the condition that mortality during this interval remained fixed.

Such a supposition, of course, is not a strict one and hence the estimates for the number of 17-year-olds for any generation, when made on the basis of the earlier census (when these people were younger) and on the basis of the later census (when they were older) naturally do not coincide. For this reason for the generations of persons born in 1942-1952, the data about which were used for analyzing the marriage rate, using the designated method we made two independent estimates of their number at the precise age of 17 years: on the basis of the 1959 census and the 1958-1959 mortality tables; on the basis of the 1970 census and the 1968-1971 mortality tables; for subsequent calculations we employed the average of these two estimates. The census data were first somewhat adjusted in order to eliminate the error in the numbers of one-year age groups as caused by rounding off the age.

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(2) Age in demography is usually measured by a whole number of years lived. For example, all persons from precisely 17 to precisely 18 years are considered 17-year-olds. However, in the analysis we are concerned with those who have reached a precise age, that is, who reached their birthday during the given year.

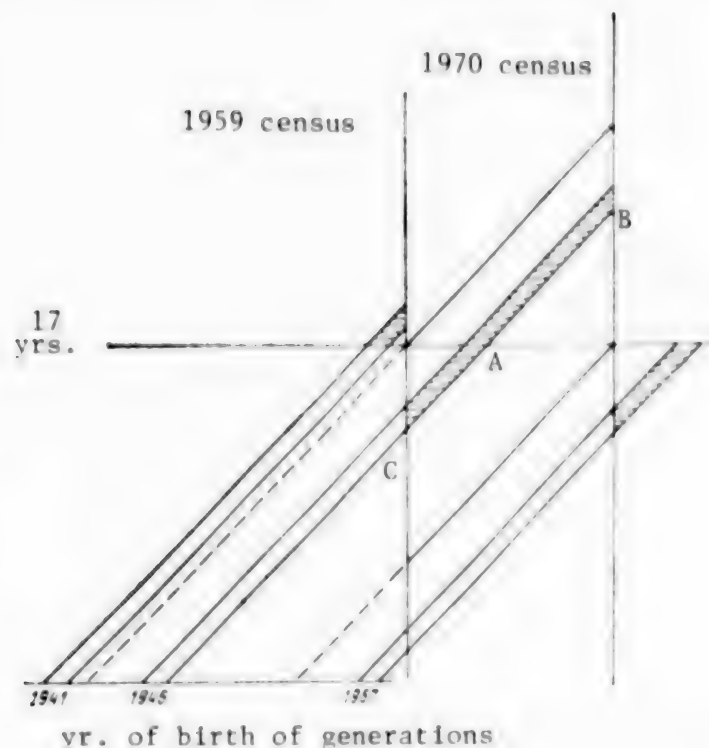


Fig. 2. Diagram of calculating the initial number of male generations

The recalculation procedure is shown in the diagram of a demographic grid (Fig. 2). The vertical lines designate the number of persons living according to ages in the 1959 and 1970 censuses while the horizontal line gives the number of persons living at the precise age of 17 years. Thus, for the generation born in 1946, the difference between the number of persons living according to the 1970 census (at the beginning of 1970 they were 24 years old) and those reaching the precise age of 17 years from this generation is formed from the number of persons dying in the area AB. In the 1959 census, this generation was 13 years old and the number of persons dying starting from the age of 13 years and up to 17 years is shown by the area CA. In the calculation we have employed, as already mentioned, the average of the two estimates. Thus, estimates were made for each of the 11 generations reaching the age of 17 during the period between the two censuses. For the earlier and later generations, the estimate for the number of persons living up to the age of 17 was obtained on the basis of just one census, as is shown in Fig. 2, for the generations born in 1941 and 1957 (the hatched areas to the left and to the right of the vertical lines corresponding to the times of the censuses).

It has been assumed that all young persons reaching the age of 17 are not or have not been married. The number of males not married by the beginning of each of the subsequent age intervals, considering in the number of bachelors as a consequence of death and entry into marriage, was determined by simple subtraction

$$S_{x+1} = S_x - B_x - M_x, \quad (2)$$



where  $S_x$  and  $S_{x+1}$  -- the number of persons never married in the precise ages of  $x$  and  $x+1$ , and  $B_x$  and  $M_x$ , respectively -- the number of persons getting married for the first time and dying in the age interval  $(x, x+1)$  according to the data of current reporting and recalculated for the generations by the previously described methods. The available information provided an opportunity to obtain series of values of  $S_x$  for  $x = 17, 18, \dots, 29$  years for several generations.

Since the probabilities of entering a first marriage were calculated, the filling out of the aggregate of males not married in each age by widowers and divorced was not important.

Usually the probabilities for entering marriage are determined by the ratio of the number of persons entering marriage in a given age to the number of persons not married at the start of the given age interval. With the symbols adopted by us

$$b_x = \frac{B_x}{S_x}, \quad (3)$$

and in the event of an open population, that is, a population the size of which changes as a consequence not only of births and deaths but also migration

$$b_x = \frac{B_x}{S_x + \frac{A_x}{2}}, \quad (4)$$

where  $A_x$  -- the migration increment.

V. V. Payevskiy has shown, however, that under the conditions of an open population with intense migration, the adopting of such an indicator as the initial one for constructing the tables is erroneous, since here they do not accurately take into account the change in the size of the population over the period for which the probability is figured. He has proposed a different method for calculating the indicators under the conditions of a rapidly changing population whereby the number of man-years lived in the given age "under observation" is more accurately determined and the corresponding coefficient is calculated, while the precise value of the coefficient is then transformed into the probability of the given demographic event. Incorporated in the formula is a multiplier which V. V. Payevskiy has termed the "coefficient of variability." (3)

In calculating the indicators of the marriage rate using this method initially the coefficient of the marriage rate is calculated with the designated correction ( $m_x$ ):

$$m_x = m'_x + k(m_x \cdot \frac{e^{\frac{m_x}{2}} + 1}{e^{\frac{m_x}{2}} - 1} - 2). \quad (5)$$

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(3) V. V. Payevskiy, "On Measuring Mortality in Migrating Masses of the Population," in the book: "Trudy demograficheskogo instituta" [Transactions of the Demographic Institute], Leningrad, Izd-vo AN SSSR, Vol 1, 1934, pp 63-133.

where

$$m'_x = \frac{2B_x}{S_x + S_{x+1}} \quad \text{-- ordinary coefficient of marriage rate;}$$

$$k = \frac{S_x - S_{x+1}}{S_x + S_{x+1}} \quad \text{-- coefficient of variability.}$$

Then the probability of entering marriage is determined:

$$b_x = 1 - e^{-m'_x k}. \quad (6)$$

The use of this method is justified by the fact that the deaths of bachelors in the age interval  $(x, x+1)$  can be viewed as their elimination from among those who could enter marriage. Moreover, it is essential to take into consideration the interaction of the mortality and marriage rates: a portion of the persons not married at the beginning of the age interval can get married and then die in the same age interval, while others can die without having married. A completely accurate calculation of the number of man-years lived until marriage in the given interval could be made if all the persons dying were divided into those who died as bachelors and those who died as married, however the absence of such data over the entire period forces us to resort to indirect estimates. Trial calculations have shown, however, that the use of the formula of V. V. Payevskiy changes the probabilities of entering marriage in a nonessential manner and for comparison it is possible to use the standard procedures for calculating the tabular indicators. For this reason, initially the ordinary age coefficients for the marriage rate were calculated  $m'_x$ , and then using formula (6) the probabilities of entering marriage according to the one-year age intervals of 17, 18, ..., 29 years for each of the generations born in 1942-1952 (see Table 1). On their basis the remaining indicators were calculated for a net marriage rate table.(4) Let us recall that the marriage rate table was calculated only for first marriages. The choice of precisely these generations for analysis is determined by the fact that only for them were there complete series of one-year numbers of persons getting married and persons deceased. Analogous calculations were made for the first marriages of one of the cohorts of women.

For the age of 30, the indicators have been obtained by extrapolating the calculated values for one year ahead. After the age of 30, the curve of the marriage rate, in dropping rather steeply in the interval of 30-34 years, subsequently asymptotically approaches the abscissa axis. Considering the

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(4) In demography a net table is a table showing the gradual reduction in the initial generation under the influence of just the given demographic process and in the designated case, the decline in the generation of bachelors under the influence of just entry into marriage (irrespective of the mortality rate).

smallness of the values of  $b_x$  for the first marriages after the age of 35, it can be assumed that they are close to zero for all ages starting from 35 years; the values of  $b_x$  in the interval of 30-34 years can be obtained by a graphic interpolation.

Table 1

Probability of Entering First Marriage for Males  
From Generations of 1942-1952 Years of Birth

yr. of gen. birth	probability of first marriage ( $b_x \times 10^4$ ) at age (years):												
	18	19	20	21	22	23	24	25	26	27	28	29	30
1942	248	385	464	521	930	1644	2104	2244	2169	2012	1834	1579	1371
1943	248	355	407	514	1069	1977	2246	2262	2106	1887	1628	1421	1254
1944	236	342	403	562	1217	2228	2495	2447	2233	1996	1804	1769	1672
1945	218	341	409	612	1495	2427	2480	2311	2027	1816	1711	1638	1538
1946	224	359	455	733	1994	2761	2606	2419	2252	2185	2161	2042	1918
1947	233	365	475	919	2275	2607	2452	2326	2262	2182	2046	1914	1763
1948	239	360	485	1219	2231	2277	2148	2101	1902	1656	1459	1324	1140
1949	277	367	550	1581	2287	2410	2441	2380	2190	2028	1947	1851	1750
1950	268	343	645	1671	2241	2431	2461	2283	2107	2018	1896	1743	1601
1951	243	304	716	1693	2276	2386	2317	2094	1957	1804	1605	1451	1287
1952	225	266	759	1813	2345	2354	2226	2107	1914	1720	1537	1393	1228

The curves obtained by the previously described manner for the age probabilities of entering the first marriage of males from the generations of the birth years of 1942, 1944, 1946, 1948, 1950, 1951 and 1952 are shown in Fig. 3. The scale of ages for each subsequent generation has been shifted one year to the right in order to more visibly show the differences in the marriage rate between generations. For a comparison in Fig. 3 the broken line shows the age probabilities for entering marriage for the female portion of the generation born in 1951.

The designated generations reached the minimum marriage age (18 years) in 1960-1970. The earliest of them (born in 1942) reached the age of 30 in 1972 and the latest (born in 1952) reached 30 in 1982. Thus, the period of entering marriage for the males of these generations encompasses (although not completely) 1960-1982, that is, an interval of time of over two decades and reflects the nature of the marriage rate over a rather long time. The years of birth for the designated generations partially encompass the war years and the period of the postwar, so-called compensatory rise in the birthrate; the number of people from generation to generation during these years changes extremely unevenly and this, with other conditions being equal, provides an opportunity to establish how the marriage rate was influenced by changes in the ratio of the sex contingents.

The obtained tables for the marriage rate of males from the real generations provided the possibility of assessing the nature of the process of the marriage rate of males and its differences from the female marriage rate.

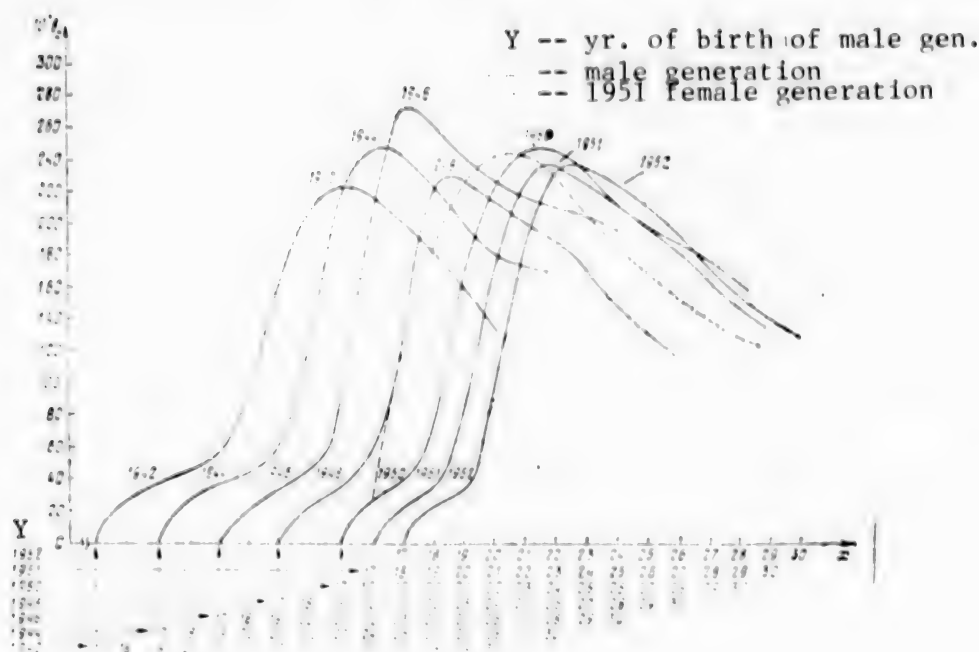


Fig. 3. Probability for entering first marriage for males of real generations

As is known, males usually marry later than females. As an average, for all the generations examined by us, by the start of the 21st year of life, around 11 percent of the males had entered their first marriage, while among females (from the 1951 generation) already 43 percent were married by this age. The "lag" of the males is observed subsequently, too: by the start of the 26th year of life, as an average for the 11 male generations, 76 percent of the males had entered their first marriage and 84 percent of the females. By the 31st year of life (the maximum age for which it was possible to trace the marriage rate of the generations), 89 percent of the males (as an average for all the generations) had entered their first marriage and 92 percent of the females from the generation born in 1951. In other words, over the first decade and a half after reaching the minimum marriage age, virtually all the females and an absolute majority of the males had entered their first marriage.

The later marrying of males can be described using the median age of marriage, that is, the age by which one-half of the size of the generation is married. The calculating of the median and not the arithmetic average in the distribution of the generation by the age of marriage in the given instance is preferable as for this it is not essential to know the entire distribution but rather sufficient to have information merely on its initial portion including the age interval within which the median is located. The median age for a first marriage for all 11 designated generations was 24 years for males while in the 1951 female generation it was equal to 21.5 years.



It is worthy of note that these values were rather close to the corresponding indicators calculated from direct data of current accounting on the number of persons marrying annually, although the latter also encompass different generations each year. According to the data of current reporting, the median age for those entering their first marriage (calculated for 5-year age groups) in 1970-1980 was, respectively, 23-24 years for males and 21.5-22.6 years for females.

Characteristic of the change in the intensity of the male marriage rate by age is a slow increase over the first 2-3 years after reaching the minimum marriage age, and then by years 23-24 a sharp increase in the probability of marrying and subsequently a gradual drop. This sharp break in the intensity of the marriage rate is due, undoubtedly, to the deferring of marriages until the completion of studies or regular service in the ranks of the Soviet Army.

The obtained indicators for the marriage rate have provided an opportunity to describe, although in a short interval of time, the change in the process by comparing the marriage rate of different generations.

In Fig. 3 one is struck primarily by the similarity in the overall appearance of the curves and this provides reason to consider such a shape as typical for the male marriage rate (in particular, for their first marriages) in the postwar years. The variation in the values of the relative tabular numbers of persons entering marriage for the designated generations is comparatively small: for virtually all the generations it keeps within the interval of  $\pm 0.01$  around the average values for the accumulated amounts of this indicator. The latter also provides the measure of the mean error which with the initial size of each generation of 10,000 = 0.01  $\sigma$ . An exception is made only for the 1942 and 1950 generations but in them the relative numbers of persons entering marriage differ little from the average.

The influence of the disproportion in the sex contingents on male marriage rates was almost unnoticeable. Let us recall that males born in 1943-1945 selected their brides in the larger generations of females born in 1946-1948. In having a relatively large "choice" of brides, they, seemingly, should have married earlier. The generation of males born in 1942, on the contrary, experienced the influence of the "scarcity" of brides born in the subsequent war years and this could lead to the deferral of marriages. However, neither case occurred. The share of persons entering their first marriage by the age of 26 from the male generations born in the war years was somewhat less than for subsequent generations, although slightly so. The median age of males in entering their first marriage gradually declined, without experiencing any marked fluctuations from generation to generation.

Fig. 4 shows the cumulative relative numbers of first marriages in the generations born in 1943 and 1950  $(\sum_{17}^x d_x \cdot 10^4)$  and the corresponding average

for all 11 generations. The indicators for these two generations represent in virtually all the designated ages, respectively, the greatest and least values of the cumulative numbers of marriages. Obviously the difference of the indicators for both generations from the average is relatively slight although differently on the various sections of the curve.

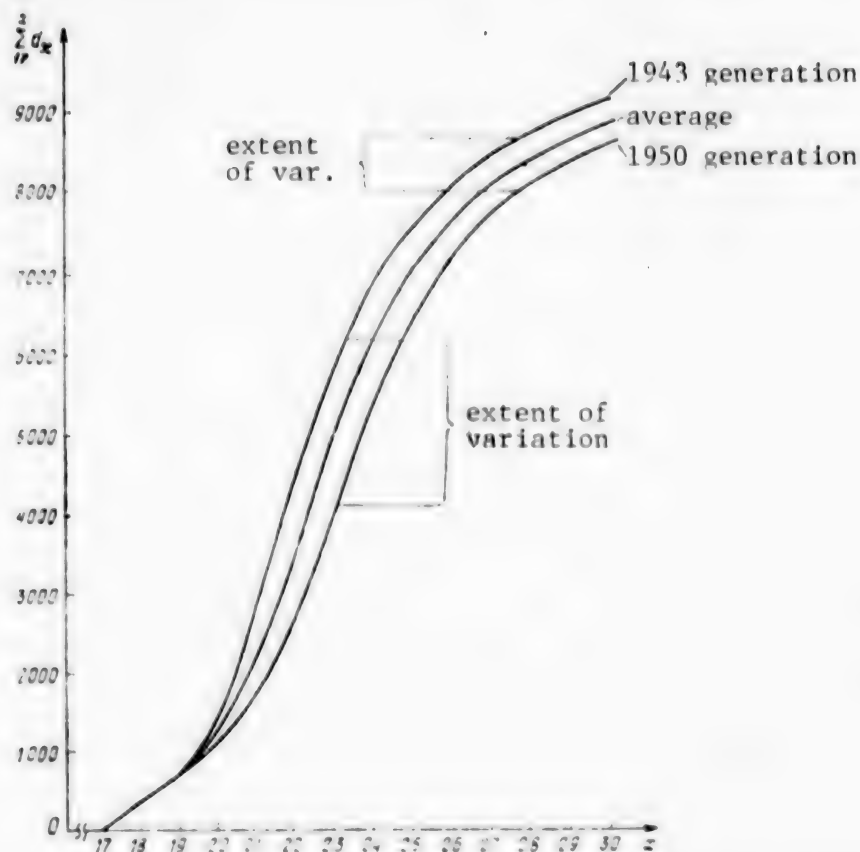


Fig. 4. The numbers of first marriages cumulative by age  $x$  in real male generations

Moreover, the cumulative numbers of marriages for all ages up to the age of 25 grow smoothly from generation to generation and this shows the absence of any destabilizing effects. Possibly the discrepancy in the sex contingents in these and previous generations told on the stability of marriages. Only this could lead to the varying frequency of second marriages in each generation but we do not possess data for verifying this assumption. That this could have occurred can be seen only from estimating the gap between the age of males and females using data from the 1979 census in couples of different age. A certain increase in the variation of the age of the spouses in the generations born in the war and first postwar years indirectly shows that the disproportions in the sex contingents influenced, evidently, the process of forming the marriage structure, although not very significantly.

It is also completely probable that the disproportion in the sex contingents reflected more on the female marriage rate, while it had little impact on the male marriage rate, in particular on the frequency of first marriages. At the same time, in Fig. 3 one can see rather clear differences between the generations in the level of the marriage rate in those ages at which the peak in the marriage rate curve occurs, that is, at the ages of 22-23. In the first three generations, the level of the marriage rate at the peak age gradually rises, reaching the high point in males born in 1946 and then declines somewhat, increasing again starting from the 1950 generation. It

cannot be excluded that the concentration of marriages at these ages, and precisely in the generations which encountered the "bride surplus" was not accidental but due precisely to the disproportion in the sex contingents.

Much more noticeable, as can be seen in Fig. 5, was the influence of the change in the induction age and the length of military service. In 1947, this was shortened from 3 years to 2 and induction age was reduced from 19 to 18 years of age,<sup>(5)</sup> but this did not tell noticeably on the marriage rate of the male generations. On the marriage rate curves the "platform" which was already mentioned in the generations of 1947 and later years became significantly narrower and the subsequent rise in the curve was much steeper and higher.

The results of the research have provided an opportunity to describe the overall trend in the change of the male marriage rate. A comparison of the indicators for successive generations clearly shows a so-called "rejuvenation" of the marriage rate. One can see a successive drop in the median age of entering the first marriage: it declined by 1.7 years between the two extreme generations. Such a decline in just 10 years must be considered comparatively large. In the same period, researchers noted a rise in the average age at which women married. The nature of the change of these indicators can be seen in examining the age distribution of marriages. The total number of marriages concluded by males up to the last year of life changed little, providing for the generations, while there was a substantial redistribution of concluded marriages by age. The number of marriages concluded at 21-25 years in the younger generations was noticeably larger than in the older generations. Conversely, the number of marriages concluded at a later age (after 30 years) is noticeably lower in the young generations than in the older. The "shift" of marriages toward the younger ages has been accompanied by the concentration of them of marriages of males in an even narrower age interval.

An analysis of the marriage rate for real male generations indicates that this demographic process has occurred without any complications. In each generation the absolute majority of males has married no later than 30 years of age. According to the data of the 1979 census, among males 10 years and older around 24 percent had never been married. The analyzing made indicates that this is explained in no way by the fact that a portion of the males remain unmarried all their life. Simply in each generation not all marry immediately as soon as they reach the average marriage age. On the contrary, the trend toward the "rejuvenation" of marriages must be considered not completely beneficial. This seems that a portion of the young couple is taking wives before reaching their civil maturity, without having become completely independent and remaining under parental guidance. This, of course, does not contribute to the stability of marriage. The influence of the marrying age on its strength in the future is a subject of special sociological research.

(5) See: V. I. Pervodentsev, "Demograficheskiye problemy SSSR" [Demographic Problems of the USSR], Moscow, 1979, p. 13; V. I. Pervodentsev, "Reproduction of the Population and Family," *SOISLOVOICHESKIVY ISSLEDOVANIYA*, No. 2, 1982, p. 84.

A comparison of the male marriage rate by real generations makes it possible also to disclose the patterns of this process and provides grounds for extrapolating the dynamics of the marriage rate in future years and this is important for forecasting the marital and family structure of the population. The current observation of the marriage rate of generations provides material for studying changes in the marriage rate under the influence of sociodemographic factors, in particular for elaborating measures of demographic policy. In incorporating data on the impact of migration in the calculations, analogous estimates for the marriage rate of real generations could be obtained for the territories.

The research results make it possible to voice proposals on improving marriage statistics. In the first place, it would be advisable to work out materials for the current reporting of marriages not only by age but also by generations as this does not represent a major difficulty, since the marriage certificate includes the year of birth for the groom and the bride. Secondly, we should have data for the statistics on the number of persons entering marriage according to a one-year age interval not up to the age of 30, as in the case now, but up to the age of 35. This would make it possible to obtain the parameters for virtually the entire marriage rate curve. Thirdly, considering the need for more profound analysis of the forming of a family, the census data on the distribution of the population by marital status should be worked out not only by age groups but also by generations. This would provide more accurate information on the age composition of the population and would significantly broaden the possibility of using modern demographic methods for analysis.

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[Excerpts] The collegium of the USSR Academy of Sciences at its last regular meeting reviewed the work done in the development and implementation into production of its automated planning system (APS).

As noted at the meeting, in the current five-year plan the republics together with its sectorial departments have put in a significant amount of work into the automation of the planning process in the framework of the APS's second phase. At the present time automated computations represent an important component part of the planning process and are carried out for all major departments, embracing such important phases of planning as development of industrial and agricultural production, the territorial aspect of the draft plan, material and technical supply, higher education and others.

The collegium heard a report by the department of culture and education and the communications department of labor and social problems on the progress achieved in 1985 in the matter of implementing the general-education and vocational-technical reform and of the work to be done in that area in 1986 and the twelfth five-year plan. It was duly emphasized that this year the republic has done much to carry out the plan jointly drawn up by the USSR Council, the republic's State Committee for Vocational Training and the Republics of the local Soviets aimed at implementing the general-education and vocational reform in the USSR and in particular, measures are being undertaken to change the structure of the educational process in the general-education schools as they switch to 11-year schooling, to further expand the network of schools, vocational and technical schools, professional and extracurricular education's institutions and to meet the additional needs for teachers. Special attention was devoted to organizing the educational training process at such places, streamlining their ties with the schools and thereby increasing the number of successful graduates for school graduates.

Nevertheless, the work being done to implement the school reform plan in the USSR has never to be significantly intensified. In 1986



of printed linens. Satisfactory work is done by the spinning subsidiaries of the Andizhan cotton combine in Fayon, Chirchik, Gulistan and Pakhtakor and of the Farash combine in Besharyk, as well as by the Karakalpak cotton production association and the weaving subsidiaries in Tashkent, Besharyk and Yangi-Yul. This is a direct result of the poor technical conditions that prevail and of the significant amount of idle machine time - for the ministry as a whole, last year one quarter of the equipment did practically no work at all. Still, too high is the figure for manpower turnover which is caused by the low level of labor and manager-services organization and the inadequate professional qualifications of the workers. All this ultimately led to the unfulfillment of production targets for finished fabrics and yarn which last year fell short by 0.7 million sq. meters and 170 tons respectively; for the first quarter of this year the figures are 4.5 sq. meters and 4.5 tons respectively.

In order to satisfy, in terms of both quantity and assortment, the demands of the republic's population for cotton fabrics, a legislation was passed to intensify control over incorporation into production of new facilities at enterprises of the Ministry of Light Industry and to provide concrete aid to enterprises and subsidiaries that lag behind. One constructive of the advance phase of the Andizhan cotton combine, which is slated for the twelve-five-year plan, is to be built with a spinning plant with an annual capacity of 10 million sq. meters of finished fabrics; also scheduled is the expansion of the work group-servicing facilities plant of Besharyk, that will help speed up the entire article of consumer goods in the republic for the finished products of the cotton industry.

Uzbekistan: (continued) 12-1957, 1958

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# EFFECT OF RURAL RESETTLEMENT IN RSFSR ON ECONOMIC GROWTH

Moscow *Ekonomika sel'skogo khozyaystva* in Russian No 10, Oct 85 pp 19-26

Article by B. Pankov, Candidate of Economic Sciences: "Problem of Rural Resettlement -- A Comprehensive Solution"/

Text In the recently adopted decree of the CPSU Central Committee and the USSR Council of Ministers entitled "On the Further Development of and Improvements in the Effectiveness of Agriculture and Other Branches of the Agroindustrial Complex in the Nonchernozem Zone of the RSFSR During the 1986-1990 Period" and in addition to measures aimed at improving the economic situation in the zone's oblasts and autonomous republics, the plans call for a considerable acceleration in the rates and an expansion in the scale for the social transformation of the rural areas. Towards this end, the plans call for considerable financial resources to be allocated during the 12th Five-Year Plan. The decree requires the use of a comprehensive approach for solving the social problems of rural reconstruction, including housing construction, an expansion in the sphere of domestic services, the construction of public health and cultural institutions, the installation of telephones in villages and so forth. In all of these questions, there is both a branch and territorial-settlement aspect, with the urgency of this problem being especially great in the case of the nonchernozem zone owing to the high level of disintegration in its network of rural settlements, the weak development of large villages, the great intra-regional differences in the nature and trends of rural resettlement and its shortage of hard surface roads.

In recent years, the questions concerned with improving rural resettlement, especially since the adoption of the 1974 Decree of the CPSU Central Committee and USSR Council of Ministers entitled "Measures for the Further Development of Agriculture in the Nonchernozem Zone of the RSFSR," have been the object of constant attention by the party, soviet and economic organs, scientists, planners and society as a whole. This is understandable. The program for the comprehensive development of the zone, in terms of its scale, tasks and the schedules for solving it, has no analog either in our country or in international practice. In this regard, the various approaches and points of view on the questions concerned with improving such a complicated socio-economic process as resettlement of the population can be explained fully.

The changes which have taken place over the past decade in the life of a nonchernozem village serve to underscore the great work carried out in



connection with the social reconstruction of the rural areas. During these years, thousands of schools, clubs, palaces of culture, hospitals and dispensaries were erected in the resettlement centers. Substantial improvements were realized in trade, domestic and transport services for the rural population. Many apartment buildings and new hard surface roads were built.

Today the active process of transforming the intraorganizational systems of rural resettlement is underway in all of the zone's oblasts and autonomous republics. The planning and construction of experimental-demonstration settlements have been launched for the purpose of carrying out a comprehensive check on the recommendations for the planning and building of villages. In terms of their level of public services and external architectural appearance, many of them are already capable of competing with small cities and some, taking into account the nearness of nature, even surpass the latter. For example, this includes such settlements at Kudinovo in Kaluga Oblast, Voskresenskoye in Yaroslavl Oblast, Fedorovskiy, Agrotekhnika and Nurma in Leningrad Oblast, Sloboda in Vologda Oblast, Voronovo, Kuznetsovskiy, Zarya Kommunizma, Povadino and Leninskiy Luch in Moscow Oblast, Verkhnyaya Troitsa in Kalinin Oblast, Karamyshevo in Tula Oblast, Mayskiy in Perm Oblast and dozens of others. It is important to note that whereas earlier suburban villages with large livestock complexes, poultry factories and hothouse combines were singled out as examples, in recent years we have been encountering on an increasingly frequent basis examples of the comprehensive building of small and purely agricultural centers of kolkhozes and sovkhoses, located in remote regions.

Experience has shown that the reconstruction of a settlement is an extremely complicated socio-economic and psychological problem and one which requires large one-time expenditures. According to the estimates of specialists, the initial investment amounts for the social infra-structure alone, per individual resident in such settlements, amount to from 800 to 5,000 or more rubles depending upon the size of the village and the maintenance of existing funds. On average, a requirement exists for not less than 3,000-3,500 rubles per resident during the initial phase of construction, of which amount roughly 75-80 percent is for the construction of apartments. Many farms are still not capable of handling such expenditures and yet the work can be accelerated if more active use is made of the population's resources for erecting housing. Valuable experience in the organization of housing cooperatives and private housing construction has been accumulated in Moscow, Leningrad and Gorkiy oblasts and yet the scale of this work is still not very great.

Experience has convincingly shown that in those regions and on farms where, from the very beginning, measures concerned with the modernization of a rural settlement were carried out on an all-round basis and in close association with production and road construction, land reclamation operations and the placement of public services installations, fine economic and social results were achieved. Many leading kolkhozes and sovkhoses in the zone which successfully completed the 1st stage in the transformation of the rural areas realized a considerable increase in their rates of growth for gross output and also in labor productivity and profits. Certainly, it would be wrong to explain these successes only in terms of social changes and yet the association here is beyond question, particularly through an improvement in the reproduction of manpower.

Our computations indicate that an increase of 1 percent in the amount of unproductive capital at leading kolkhozes and sovkhoses ensures a corresponding increase in labor productivity of 0.3 percent and on farms with a settlement of workers, close to optimum -- by 0.8 percent.

Many suburban farms in Moscow, Leningrad, Gorkiy, Tula, Kirov and Vologda oblasts can serve as examples of a positive solution being found for the problems of resettlement. Rather significant in this regard are the kolkhozes Novaya Zhizn in Shchekinskiy Rayon in Tula Oblast and the Krasnyy Mayak in Gorodetskiy Rayon in Gorkiy Oblast, where the active process of concentrating the population was successfully accompanied by the construction of roads and socio-cultural and domestic measures.

The process of modernization of a rural settlement proceeded in a considerably weaker manner in the remote rayons of oblasts (ASSR's) in the zone, especially at economically weak kolkhozes and sovkhoses. Under conditions involving insufficient support in the form of resources and, most importantly, the absence of a network of roads, the solutions for the established tasks turned out to be difficult here. Insufficiently thought out plans in the case of small villages, the poor selection of future settlements and numerous other objective and subjective factors had an adverse effect and, as a result, the development of resettlement operations did not proceed as planned in these regions.

Thus, many unsolved problems and difficulties still remain with regard to the modernization of resettlement operations. First of all, one of the principal tasks has not yet been solved fully -- achieving a sharp reduction in the migratory flow of the population from rural areas, although for the zone as a whole it decreased by 50 percent during these years. But this undesirable process continues nevertheless and, as shown by analysis, the majority of those leaving the rural areas are youth, specialists and skilled personnel. During the 1959-1984 period, the zone's rural population decreased by 42.3 percent and in the RSFSR -- by 29.2 percent. As a result, its proportion compared to the zone's overall population fell from 42 to 21 percent (in the RSFSR -- from 48 to 28 percent).

The scale of the departure of residents from the rural areas, the consequent processes associated with deformation of the population's age and sex structure and the reduction in its natural growth in a majority of the zone's oblasts and autonomous republics have now reached a maximum limit and are no longer in keeping with the interests of the zone's APK [agroindustrial complex], since this leads to difficulties in the matter of ensuring that the kolkhozes and sovkhoses are supplied with the needed labor resources and to depopulation of a portion of the peripheral rural territories.

The normalization of the demographic situation is closely associated with both the current and long-term problems associated with the formation of labor resources. Actually, the impending change in labor generations in agriculture may become sharply complicated, since the able-bodied population is decreasing more rapidly than the rural population as a whole. Today, at kolkhozes and sovkhoses in Kirov, Yaroslavl, Pskov, Kalinin, Kostroma, Smolensk and other oblasts, the proportion of persons of pension age is excessively high and that

for children and juveniles correspondingly low. In the labor resource structure, a large proportion is occupied by people of pre-pension age, especially in livestock husbandry. Meanwhile, a generation that is limited in numbers, those born in the 1960's, is now becoming of working age.

The discussion which took place on the problems of rural resettlement of the zone underscored the urgent nature and national economic importance of the problem as a whole. During the course of this discussion, many theoretical and practical principles which earlier formed the basis for the transformation of the rural areas were defined more precisely. First of all, the concept of an autonomous consolidation of the rural areas within a political framework aimed at sharply reducing the number of settlements was sharply criticized. Today the serious errors in classifying settlements as being promising or unpromising, based upon stern administrative restrictive measures in carrying out the program of settlement of small villages, have become very obvious. As is known, the prohibition in these settlements against any type of construction and the hurried "removal" of socio-cultural and domestic institutions have caused great damage to the APK economy in the nonchernozem zone and it has stimulated the departure of the rural population for cities, by-passing promising centers. In the process of transforming the rural areas, shortcomings were also uncovered in the overall theory for small populated areas, which for a long period of time were rejected in independent development, as an attempt was made to solve the rural problems using purely "city" methods.

In recent years, a number of positive advances have been realized in solving the mentioned problems. One positive development was the fact that small forms of resettlement were recognized as being equal elements of a single system for resettlement of the country. Considerably better results were realized in solving the problems concerned with mutual coordination of the development of municipal and rural settlements. However, for some vital problems there was no unanimous opinion among the researchers and this tended to hold back the process of reorganization of the rural areas. Thus, up until now it has not been entirely clear as to how best to distribute capital investments for the various levels of resettlement. Indeed, it is fully obvious that it would be wrong, in the face of limited resources, to divide up all resources proportional to the number of rural residents.

In assigning a positive evaluation on the whole to the trend towards mutually associated resettlement, we must necessarily note that, just as in the past, many of the recommendations call for the active elimination of a rural settlement network in the absence of adequate economic justifications. There now exists a considerable variety of opinions concerning the level of centralization for resettlement operations: from proposals -- "to retain" the existing network of settlements and develop highway construction, to a point of view which holds that it is generally necessary to eliminate fixed settlements in the peripheral areas of a majority of the rural regions and to create in their stead several large points in a zone close to the rayon center.

It is our opinion that extreme points of view concerning the process of centralization of the rural population (especially the concept of "super-concentration") are predicated upon incorrect methodological premises, which in turn are based upon a simple extrapolation of the trends "production



concentration -- resettlement concentration" and which do not take into account the sluggish nature of resettlement, which should never be viewed only as a negative phenomenon.

Beyond any doubt, the centralization of the agricultural population and the creation of consolidated forms for rural resettlement constitute a process which is on the whole progressive and one which derives from the requirements for the development and further concentration of agricultural production and the need for bringing the cultural-domestic conditions of city and rural residents closer together. However, in the process it will always be necessary to take into account the specific peculiarities of agriculture which, in the immediate future according to V.I. Lenin, will be "absolutely unavoidable." It is believed that the failure to evaluate properly the technological and organizational factors of agricultural production and the trends in the development of the private plots has often led to and is now causing erroneous concepts in rural resettlement and an incorrect determination of the level of its centralization. One such specific condition is the continuous association between a settlement and land areas.

During the development of the variants for consolidating settlements, certain contradictory aspects which accompanied this process in livestock husbandry were often overlooked. A farm and a settlement have always accompanied one another, since everything within the system "agricultural lands - worker - animals" is so mutually associated that even negligible reductions are unacceptable. Here we have in mind settlements which service farms having 150-200 cows. Reliance that is placed only upon large complexes and only upon consolidated settlements for them, as is known, is not justified. The separation of farms from natural agricultural lands (in the zone -- this includes small haying and pasture tracts, overgrown and unproductive meadow lands) has created without exaggeration an acute problem with regard to the problem of feed supply. The conversion over to indoor maintenance for livestock has required an intensification of feed production on arable lands and it has complicated the problem of transporting green feed to the farms. The variant for the development of farms without housing required faultless transport operations, the presence of an intra-farm hard surface road network, access roads to the farms and efficient labor organization. Difficulties arose (especially in winter) in connection with transporting milkmaids there and back several times daily (from the place of residence to the farm) and transport expenditures increased sharply (by 15-20 percent). The peculiarities involved in the resettlement of worker families were not fully taken into account. Studies revealed that a large number of families in small villages consist of pairs: the husbands work in field crop husbandry and the wives -- on farms. Whereas the resettlement of machine operators to central settlements was justified from an economic standpoint, the removal of their families placed the farms at a disadvantage since they were left without milkmaids.

The objective existence of limits on resettlement centralization is explained by the effects of other factors, for example the water supply for dwellings of settlements and farms. In order to maintain a herd of 800 cows, more than 1 million cubic meters of water are required for irrigating the pastures alone. But even more important is the need for faultless operation of the centralized water supply systems. This problem was solved very simply in small settlements



by means of co-located reservoirs. In future centers, the expenditures for water supply will require considerable capital investments. A need will also exist for taking into account the ecological consequences of excessive production concentration.

From a resettlement standpoint, a further increase in the level of population concentration for the purpose of creating normal conditions for the functioning of institutions of the social infrastructure will become possible by converting over from simple to more complicated forms of concentration -- to concentration within a network of settlements, that is, based upon group mutually related resettlement.

In this regard, the concept of "area concentration" of the rural population, which forms the basis for the idea of saturating the rural regions with a road-transport infrastructure, warrants attention. Distinct from "spot" concentration, which presupposes a continuous change in the level of centralization of the population, the given models of rural resettlement make it possible, by means of well developed contacts between villages, to develop production effectively and to utilize labor resources and land areas without eliminating a large number of settlements prematurely. Actually, this method is presently being followed by many socialist countries with highly developed agricultural operations (Hungary, Czechoslovakia). In Hungary, for example, owing to a high level of development of the road network in rural areas, nobody is giving any thought to the elimination of farmsteads. However, in view of the tempting nature of the mentioned approach for reorganizing resettlement work, it is our opinion that it would be a mistake to negate the need for consolidating somewhat the agricultural settlements (especially the brigade and section centers and the settlements of a portion of the villages).

Analysis has shown that the resettlement structure in many oblasts (ASSR) has deteriorated noticeably today, that a further deterioration in the villages is continuing and that the formation of a supporting network of settlements is taking place all too slowly. Somewhat alarming is the stable trend towards a reduction in the population even in promising settlements, especially in the southern oblasts of the zone (Bryansk, Orel, Ryazan, Gorkiy). Despite a considerable reduction (by 17 percent) in the number of villages, today 75 percent of them (where approximately 20 percent of the rural residents are living) number less than 100 persons. A consolidation of settlements selected as being promising would be extremely negligible. The average population of promising centers increased during the 1970-1979 period by only 3 percent and this occurred despite the fact that approximately 100,000 of the villages were considered to be non-promising in nature. The resettlement task was fulfilled by roughly 50 percent and in some oblasts -- by 20-25 percent.

The forecast for rural resettlement, which we made using the Markov network method, revealed considerable sluggishness in the development of a network of rural settlements (even under conditions involving a raised migration of the rural population) and this can be explained by the relative durability of the material elements of rural settlements, the existence of private plots and by psychological factors. In a number of instances, a negligible reduction in the number of rural settlements (especially in highly urbanized oblasts: Moscow, Leningrad, Sverdlovsk) can be evaluated in a positive manner as a condition for

satisfying the increasing requirements of society for country recreation, the building of summer cottages and other types of recreation.

Beyond any doubt, the disappearance of settlements will take place owing to various circumstances and yet there is no basis for stating that the number of villages will decrease by a factor of 6.5, as predicted in earlier forecasts. Thus light resettlement operations are considered to be a reality for the future and they must be taken into account. In addition, certain tactical questions concerned with modernization of the rural areas must be examined.

The complicated nature of the forthcoming period will also involve having to overcome the negative trend of a deterioration in settlements as a result of the continuing migration of residents to cities. The latter circumstance raises the need for developing effective measures for controlling the migration processes.

What are the socio-economic mechanisms which can ensure a more favorable living environment at a specific populated point and which determine the migratory behavior of rural residents? This is by no means an idle question.

At the present time, tremendous capital investments are being made available for the development of promising villages and at times this is producing the desired effect. At other times however, the results leave much to be desired. The prevailing view regarding this process (one which is quite widespread) directly associates the migratory behavior of rural residents with light resettlement operations (in principle -- the greater the proportion of small villages in the settlement structure, the higher will be the intensity of migration by rural residents). However, recent studies have introduced substantial changes into these notions.

Thus the results which we derived from an analysis of linear regression models for migration allow us to draw the conclusion that in recent years the structure of a rural resettlement network (that is, the ratio of large, medium and small settlements) and the average size (in terms of number of residents) of kolkhoz and sovkhos centers are on the whole associated to only a negligible degree with the volumes and dynamics of the migratory flow from the rural areas. This conclusion is very important with regard to determining the methods for further improving resettlement operations. Actually, the attempts by planners to change sharply the structure of settlements and to form certain "ideal" consolidated centers, as is well known, led to extremely negative consequences. Multiple-factor analysis has shown that today a rather strong influence is being exerted on the migration of residents not by the number of settlements but rather by their functions, the degree of spread of non-agricultural employment, the level of development of the social infrastructure and the degree of saturation of a territory with hard surface roads. It is fully understandable that the influence by each of these factors is not being manifested in pure form but only in union with other factors and thus the force of their effect will vary depending upon the specific conditions.

Multiple-function settlements have undergone the greatest development -- farm centers combined with rural soviets, which develop on the basis of a combination of several production efforts (agriculture, processing industry,

agricultural service branches, subsidiary trades and industry not associated with the APK and so forth). A balanced structure for jobs at such points provides the rural workers with better opportunities for selecting a profession (especially in connection with female labor) in conformity with one's specialty and inclination. The proportion of those employed in agriculture at such settlements is roughly 40 percent, compared to 65-70 percent at purely agricultural centers. As a result of a high employment of workers in industry (up to 40 percent) and cultural-domestic services (up to 20 percent), constant growth is being observed here or at least stabilization in the number of residents. It is important to emphasize once again that the demographic stability of these settlements is observed even in small population groups.

An important task for the forthcoming period in connection with the modernization of resettlement operations is the purposeful formation of such settlements in regions and the creation of agroindustrial centers at many points through the proper placement of enterprises for the processing of flax, meat, milk and vegetables, the mixed feed industry, systems for storage, procurements and warehouse and packaging economies, transport, sphere of services and branches and departments of industrial enterprises. The solving of this task will make it possible to expand considerably the sphere of employment for the rural population (especially young women) and this in turn will make it possible to normalize the ratio for the male and female population. The question of providing the rural regions of the nonchernozem zone with additional jobs of a non-agricultural nature (especially those associated with the APK) through an appropriate "unloading" of municipal settlements arose long ago and it is still not being resolved satisfactorily. It is absolutely clear at the present time that even the strongest measures concerned with the social development of the rural areas will not produce the proper results if the rural areas are not taken into account during the development of municipal centers.

All other conditions being equal, it was established that capital investments in the non-productive sphere of kolkhozes and sovkhoses have now become one of the strongest factors for stabilizing the size of the rural population in the zone. It is interesting to note that during the 1970's the dynamics of the migratory flow were influenced to the greatest degree by capital investments of a productive nature and this obviously was associated with the construction of new livestock husbandry farms and complexes. Computations reveal that a considerable change took place during these years in the structure of the factors of the non-productive sphere, with an expansion being noted in the group of social characteristics that create an attractive social environment for the rural population. First place with regard to the variation in the indicator for the migration of rural residents is now occupied by the availability of housing facilities (per worker), second place -- by the indicator for the availability of cultural institutes for rural residents (per 1,000 individuals), third place -- by the indicator for ensuring that the population is supplied with doctors (per 1,000 residents) and fourth place -- by the density of the network of automobile highways. The appearance of social factors which are affecting the intensity of the migration by rural residents indicates that the period of continuous withdrawal of the population from rural areas is being replaced by a period of selective withdrawal. A "tightening" of labor resources is taking place in the more intensively built up centers of the zone's APK. Thus, experience indicates that migration can and must be



controlled, provided the modernization of rural resettlement is carried out in the correct manner.

During the 12th Five-Year Plan, there will be a requirement for building more housing, roads and installations of a socio-cultural nature in the rural areas of the nonchernozem zone. In this regard, importance is being attached to utilizing the increase in capital investments in the non-productive sphere in a manner such that maximum results are achieved in stabilizing the size of the rural population. Regression analysis has shown that during the 1970's the improvements noted in the use of investments were not coordinated fully with the tasks for reducing migration from the rural areas. Quite often the resources are invested in building villages, the development of which took place in the absence of any special participation by planners. In the process, the acute situation prevailing in the sphere of services was not taken into account. Random analysis of the development of settlements in the northwestern group of rayons in Novgorod Oblast reveals that housing construction during these years was carried out only in the rayon centers and in the large villages adjoining them. This small group of settlements accounted for approximately 75 percent of the overall increase in the housing resources.

Certainly, the chief cause of this situation was the objective shortage of resources. All of this forced the rural builders to carry out their construction mainly in territories adjoining cities. But there were also other factors which held back and which are now holding back the construction of a supporting network of settlements. Actually, the existing city-construction norms for objects of the social infra-structure are now oriented mainly towards the conditions of municipal construction and to such a generally formal sign as the size of a population in a settlement. As a result, completely unsound differences are being created with regard to ensuring that the objects are supplied with services in regions having a different resettlement structure. In the zone's oblasts having a high degree of dispersion for the rural settlement network, the lowest indicators are being observed for ensuring that the projects have facilities at their disposal for public health, trade, education and culture. Meanwhile, during the forthcoming period the modernization of rural resettlement must be oriented mainly towards remote rural areas, where historically there has been a dense network of small settlements, in which the population in recent years has decreased as a result of the withdrawal of residents from the rural areas. Thus, only at 30 percent of the zone's central farmsteads, where the population rate is in excess of 500 persons, is it possible to form on the basis of modern norms a minimal primary complex of institutes for cultural-domestic services. Roughly one third of the supporting settlements are included in the population category for up to 200 persons, including at kolkhozes -- approximately 40 percent. Thus the building of small centers is being held up by an imperfection in the normative base for the social infra-structure. In the process, the quality of the projects being erected is suffering to a considerable degree. In particular, the settlements for farm brigades and sections were placed at a disadvantage in this regard. Whereas the central farmsteads of kolkhozes and sovkhoses are now being provided with general plans for planning and building, these settlements for all practical purposes do not have general plans even though they have a strong requirement for such plans. Thus, for example, at settlements with a population of from 100 to 150 persons, which in accordance with the 1979



Census includes about 13 percent of the settlements for kolkhoz and sovkhoz brigades and sections, it is practically impossible in accordance with the norms to build standard day nursery-kindergartens, elementary schools, clubs, baths, stores and so forth, since the number of residents is not commensurate with the recommended amount of construction. A paradoxical situation is developing: agricultural valuable small settlements in which roughly 50 percent of the production funds are now invested do not have simplified plans for planning and building. Low profitability farms which are unable to attract workers to these settlements, since service institutions are lacking here, are in especially dire straits.

In this regard, a considerable increase is required in the limits for resources being released for planning. In Perm Oblast, for example, the proportion of the mentioned expenditures compared to the overall volume of construction-installation work is roughly 0.5 percent, although the normative requirement is 2-3 percent.

The existing classification of villages according to the degree of their future promise is inhibiting to a considerable degree an increase in planned control over rural resettlement. Today many specialists in the area of rural resettlement have drawn the conclusion that, using the same resources allocated for the reorganization of villages, the socio-economic losses in the nonchernozem zone would have been considerably less if the city-construction policy of classifying settlements as being promising or unpromising had not been carried out over a period of many years.

At the present time, it would appear that the concept of an unpromising village has disappeared. In accordance with a new statute, all villages must be classified according to three categories: a promising settlement, preserved for a computed period of time, first to be settled. However, very little change for the better was noted in the various areas as a result of this innovation. This was especially true for the residents of villages that were not considered to be support points. And indeed, from 50 to 70 percent of the rural residents live here. Many settlements "changed" their status many times: from promising entities, they were converted into villages of "limited development," and later they became unpromising entities. On some farms, even the leaders were quite often unfamiliar with the future fate of the villages.

The new instruction provides a very diffused definition of villages retained for the visible future as points "for which the economic base for development was not disclosed prior to the time of planning." The question is asked as to how can the development of such a settlement be planned if a general plan was never prepared for it? Actually, the recommendation is made once again in the instruction to concentrate all types of capital construction in promising settlements. A question arises regarding the status of capital construction in the preserved villages. In accordance with this scale, many small villages inhabited by pensioners and elderly people generally do not fall into any category, since the farms are still unable to accommodate them and an economic base for further development is lacking here. The fate of settlements for farm production centers has not been clearly defined. And for the nonchernozem zone, this indeed is a very important question in connection with the reorganization of the rural areas.

In our opinion, further work in this regard must be aimed not so much at searching for a general classification for the degree to which a village is to be considered promising, but rather it should be directed towards determining (taking into account the specific conditions) the scientifically sound norms for building the central farmsteads and production centers and also for improving living conditions in the remaining villages, including small points. Appeals can provide a great amount of assistance in the development of small settlements and yet they can remain only as appeals if they are not raised to the rank of city construction policy. The latter circumstance indicates that such towns require their own plans, although they are very simplified in nature, plans which call for the repair and modernization of production and social buildings and structures.

The fears of some economists, with regard to the allocation of resources for the maintenance of small villages which are not considered to be supporting entities, is that this will again lead to a dispersion of capital investments and yet this fear is not justified.

First of all, we have in mind the expenditure of only 8-10 percent of all of the investments and, secondly, the fate of the developing centers will quite often be dependent upon the normal development of these settlements, since a considerable portion of the labor resources are located here. Computations which we carried out using Kungurskiy Rayon in Perm Oblast as an example have shown that an abrupt consolidation of central farmsteads located on the periphery of a rayon is still ineffective and premature, since production is dispersed among small farms. An important task here is that of retaining to a maximum possible degree the settlements of production subunits and of installing gravel roads leading to them. The development of a social infrastructure requires an increase by a factor of 1.5-2 in the capital investments per resident, compared to the modern level, with such investments being increased to 5,600 rubles. Seventy five percent of all resources should be used effectively for the formation of the social infrastructure for central farmsteads, 13 percent -- for building production centers and the remaining investments (12 percent) -- for the maintenance of rank and file villages. If such a program is to be realized, assistance will have to be provided by the RAPO /rayon agroindustrial association/.

At economically strong farms, the program for reorganization of the rural areas will appear differently. Here it is most advisable to carry out an active process of random resettlement of small towns (which have labor resources), but not at a central farmstead but rather in settlements of production subunits. The capital investment requirement for the social infrastructure will amount to 4,300 rubles per resident. Of this amount, 65 percent will be used for completing the construction of central farmsteads, 28 percent -- for the creation of housing and social, cultural and domestic facilities in brigade and section villages and 7 percent -- for public amenities in the remaining villages.

Interesting experience has been accumulated in the nonchernozem zone in connection with the restoration of unpromising towns, especially those in which small farms are located. For example, the following task has been established in Moscow Oblast -- by 1990, to connect these villages by means of improved

dirt roads with the central farmsteads or with the settlements of sections, to repair all of the housing resources, to assist private construction in every possible way and to create for the workers all of the required cultural and domestic conditions.

The example of the Rassvet Sovkhoz in Dmitrovskiy Rayon is rather instructive. Here 27 towns, including a central farmstead and a farmstead of sections and 22 more towns located on the sovkhoz's territory were made available for further improvement and development. Only two towns will be resettled. Special attention was concentrated on developing the farm's production centers. The plans call for the construction in each settlement of a store 50X60 square meters in area, a tearoom for 10 customers, a medical point, a brigade building, baths, a complete receiving point for domestic services, a branch kindergarten and apartment buildings of the farmstead type.

Certainly, the Moscow experience cannot be distributed mechanically to other oblasts of the nonchernozem zone. It would be a great mistake, for example, to develop all of the populated points on each farm in Kirov Oblast and to reject the random placement of the families of machine operators and other workers into settlements, sections and central farmsteads. Another situation is developing in many rayons in Kaluga Oblast, where the need for small production subunits is gradually subsiding coincidental with the conversion over to the departmental system. The watch method is being used here during the period of mass field operations.

Each oblast must develop its own program and stages for the reorganization of rural areas, with consideration being given to the economic potential of the farms, production organization, the prospects for road construction and land reclamation construction, branch specialization and concentration and so forth.

The sluggish nature of rural resettlement operations raises the need for accelerating the development of new approaches for locating institutes of the social infrastructure, with consideration being given to retaining the dispersed forms of resettlement for a period of time.

At the present time, the planners are creating mainly a territorial-multiple stage system of cultural-domestic services in regions of the nonchernozem zone, a system which is being developed taking into account the promising nature and the hierarchy of the settlements. Thus, it has been proposed that the residents of small villages "advance" by degrees of service, which under conditions involving a weakly developed intra-farm road network is accompanied by great losses in time. Meanwhile, a great amount of experience in the development of such service systems was accumulated long ago in city construction, with the services "advancing" to meet the consumer rather than the consumer "advancing" to the services. In many regions of the country, successful combinations have been found for organizing fixed service forms with mobile ones. For example, in order to improve trade operations in small villages in Belorussia, the cooperation specialists expanded the practice of opening up stores in adapted facilities (old clubs, schools and so forth).

Unfortunately, the creation of new service forms which satisfy the requirements of residents of small towns is still proceeding in a very slow manner.

During the 12th Five-Year Plan, a conversion should be carried out from the selective construction of individual model settlements to the reorganization of resettlement operations at the level of individual farms and rayons. During the course of this experiment, different variants for converting over from an existing settlement to a planned one should be tried.

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